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# MSC FISHERY ASSESSMENT REPORT

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FINAL REPORT FOR:

**Norwegian Seafood Export Council**  
**Norway North East Arctic cold water prawn**  
**fishery**



Source: [www.fisheries.no](http://www.fisheries.no)

**REPORT No. 2011-0004**

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# MSC FISHERY ASSESSMENT REPORT

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**Project Name:** Norwegian Seafood Export Council - Norway North East Arctic cold water prawn fishery

**Determination Phases/Type of report:**

- Preliminary Draft Report
- Peer Review Draft Report
- Public Comment Draft Report (Stakeholders review)
- Final Report
- Public Certification Report

The objective of this project has been to assess the Norwegian North East Arctic cold water prawn trawl fishery, on behalf of the client Norwegian Seafood Export Council, against Marine Stewardship Council's principles and criteria for sustainable fishing.

Report No.: 2011-0004	Date of this revision: 06.02.2012	Rev. No. 4
Report title: MSC Fishery Assessment report: Norwegian Seafood Export Council - Norway North East Arctic cold water prawn fishery		
Work carried out by: Mr. Don Parsons - Independent Expert Edgar Henriksen - Independent Expert Sandhya Chaudhury - DNV, Lead auditor Anna Kiseleva - DNV, project administrator		
Work verified by: Einar Strand, DNV Certification AS		

Key words:

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### ABBREVIATIONS

AFWG	Arctic Fisheries Working Group (ICES)
BSMP	Barents Sea Management Plan
CPUE	Catch per unit effort
DNV	Det Norske Veritas
EEZ	Exclusive Economic Zone
ETP	Endangered, threatened and protected species
EU	European Union
FAM	Fisheries Assessment Methodology
FAO	Food and Agriculture Organisation
FMC	Fisheries Monitoring Centre
FPZ	Fishery Protection Zone
HCR	Harvest Control Rule
ICES	International Council for the Exploration of the Sea
IMR	Institute of Marine Research, Norway
MSC	Marine Stewardship Council
NAFO	Northwest Atlantic Fisheries Organisation
NGO	Non - Governmental Organization
NIPAG	NAFO/ICES <i>Pandalus</i> Assessment Group
NSEC	Norwegian Seafood Export Council
P1	Principle 1
P2	Principle 2
P3	Principle 3
PINRO	Polar Research Institute of Marine Fisheries and Oceanography



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PI	Performance Indicator
SINTEF	Selskapet for Industriell og Teknisk Forskning / Organization for Industrial and Technological Research
SGP	Scoring guidepost
SSB	Spawning Stock Biomass
SWOT	Strengths, weaknesses, opportunities and threats
TAC	Total Allowable Catch
UN	United Nations
UTC	Coordinated Universal Time
VMS	Vessel Monitoring System
WWF	World Wildlife Fund

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### LIST OF SYMBOLS

B	Biomass.
$B_{lim}$	Minimum biomass. Below this value recruitment is expected to be 'impaired' or the stock dynamics are unknown.
$B_{msy}$	Biomass corresponding to the Maximum Sustainable Yield (biological reference point)
$B_{trigger}$	Biomass encountered with low probability if $F_{msy}$ is implemented and calculated at 50% of $B_{msy}$ .
F	Fishing mortality
$F_{lim}$	Exploitation rate that is expected to be associated with stock 'collapse' if maintained over a longer time. Precautionary reference point
$F_{msy}$	F giving maximum sustainable yield (biological reference point).
K	Carrying capacity
MSY	Maximum Sustainable Yield

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### SUMMARY

This report provides information on the assessment of the Norway North East Arctic cold water prawn fishery for the client group Norwegian Seafood Export Council against the Marine Stewardship Council's Principles and Criteria for Sustainable Fishing. The report is prepared by Det Norske Veritas Certification AS.

The assessment team used the default assessment tree as defined in the MSC Fishery Assessment Methodology version 2.1 (FAM v.2.1).

#### 1.1 The Assessment team

Sandhya Chaudhury: Lead Auditor & Team Leader, DNV

D.G. (Don) Parsons: Expert for Principle 1 & 2

Edgar Henriksen: Expert for Principle 3

Anna Kiseleva: Project administrator, DNV

#### 1.2 Assessment timeline

Announcement of Main Assessment: 1<sup>st</sup> December 2010

Site Visit and Stakeholder Consultation: 14<sup>th</sup> & 15<sup>th</sup> March 2011

Expected Date of Certification: March 2012

#### 1.3 Scores for each Principle

Principle 1: 88,1 PASS

Principle 2: 90.0 PASS

Principle 3: 86.6 PASS

#### 1.4 Strength and weakness

##### 1.4.1 Strengths

The attributes of the Norway North East Arctic cold water prawn fisheries that are helpful in achieving sustainability and thereby complying with MSC principles are:

- Fishery removals of the target species are well below advised TACs
- Being a relatively small fishery, the ecosystem impacts are low
- No retained species other than the targeted species.
- Strict adherence of skippers to laws, regulations and requirements
- Pro-active cooperation with stakeholders

##### 1.4.2 Weaknesses

The attributes of the Norway North East Arctic cold water prawn fisheries that may be a hindrance to achieving sustainability and thereby meeting the MSC principles are:



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- No Harvest Control rule
- No official Management Plan
- No formalized registration of by-catch

### 1.5 Determination

The fishery achieved a score of 80 or more for each of the three MSC Principles, and did not score under 60 for any of the set MSC Criteria. The assessment team therefore recommends the certification of the Norway North East Arctic cold water prawn fishery for the client group Norwegian Seafood Export Council.

### 1.6 Conditions, Recommendations and timescales

**Conditions:** The fishery attained a score of below 80 against 6 Scoring Indicators. The assessment team has therefore set conditions for continuing certification that the client is required to address. The conditions are applicable to improve performance to at least the 80 level within the periods set by the DNV assessment team but no longer than the term of the certification.

#### **Condition 1: Absence of Harvest Control Rule**

##### **PI CATEGORY 1.2.2**

**PI:** There are well defined and effective harvest control rules in place

**SG:** 80

##### **ASSESSMENT TEAM FINDINGS:**

Although management tools for the Norway North East Arctic cold water prawn fishery are well defined and consistent with the harvest strategy, there is no formal harvest control rule for this fishery.

##### **PI CATEGORY 3.1.3**

**PI:** The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach.

**SG:** 80

##### **ASSESSMENT TEAM FINDINGS:**

There is no formal management policy; however there is ongoing work to establish a general management plan as well as a specific Harvest Control Rule for Norwegian shrimp fisheries in the Barents Sea (ICES I and II).

##### **PI CATEGORY 3.2.1**

**PI:** The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.

**SG:** 80

##### **ASSESSMENT TEAM FINDINGS:**

There are no short or long-term explicit management objectives; however there is ongoing work to establish a general management plan as well as a specific Harvest Control Rule for Norwegian shrimp fisheries in the Barents Sea (ICES I and II)



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### **ACTION:**

The client, Norwegian Seafood Export Council represents the whole Norwegian fleet targeting shrimp in the unit of certification. Thus, it is incumbent upon NSEC to take a proactive role in encouraging the industry to support authorities in their work to establish and implement an explicit harvest control rule for Norwegian shrimp fisheries in the Barents Sea (ICES I and II). It is expected that the Harvest control rule will be consistent with ICES advice and precautionary approach, as well as define a clear and explicit strategy on how to manage the stock, when the stock limits are approached.

### **TIMESCALE:**

Explicit management plan and Harvest Control Rule for Norwegian shrimp fisheries in Barents Sea (ICES I and II) should be implemented within the timeframe of this certificate. Active support for an appropriate management plan and Harvest control rule proposal should be demonstrated with an immediate effect.

### **Condition 2: Impact on sensitive habitats**

#### **PI CATEGORY 2.4.1**

**PI:** The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.

**SG:** 80

#### **ASSESSMENT TEAM FINDINGS:**

The current knowledge on the impacts of shrimp trawling on sensitive habitats is incomplete. Thus, it is not possible to say, with a high degree of certainty, that the fishery under assessment is highly unlikely to reduce structure and function of sensitive habitats in the Barents Sea to a point where there would be serious or irreversible harm.

There is an on-going project (MAREANO), coordinated by the Institute of Marine Research, the Geological Survey of Norway and the Norwegian Hydrographic Service, aimed to map distribution and structure of sensitive habitats in the Barents Sea and to assess potential impact of trawling on the habitats like coral and sponge habitats.

### **ACTION:**

The NSEC on behalf of Norwegian shrimp industry is expected to monitor results from the MAREANO project, and should the results indicate significant impacts of shrimp trawling on sensitive habitats, take an immediate action in order to reduce impact of trawling and eliminate the risk of impairing structure and function of sensitive habitats in the unit of certification.

### **TIMESCALE:**

It is expected that quantitative information on distribution of sensitive habitats in the Barents Sea and the impacts of trawling on these habitats would be obtained through the MAREANO project within the timeframe of this certificate.

Based on the results from the MAREANO project, the client should, at every surveillance audit, demonstrate that necessary actions are taken in order to protect sensitive habitats from destruction.




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### **Condition 3: Discards of by-catch**

#### **PI CATEGORY 3.1.4**

**PI:** The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.

**SG:** 80

#### **ASSESSMENT TEAM FINDINGS:**

Under the Marine Resources Act, landing of all by-catch is mandatory. But since the responsibility & costs for disposal of all non-commercial by-catches are borne solely by the fishermen, this regulation risks being undermined in the case of large amounts of by-catch (eg. Polar cod by catch).

Directorate of Fisheries tend to agree with the fishermen on the fact that it is not always reasonable to bring big accidental catches of polar cod onshore and possibilities for amending the regulation is under consideration. However, the fact that the mandatory regulation does not seem to be adequately enforced and monitored by management raise some concern and pose a condition to certification.

#### **PI CATEGORY 3.2.3**

**PI:** Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with.

**SG:** 80

#### **ASSESSMENT TEAM FINDINGS:**

A monitoring, control and surveillance system has been implemented. In most instances the ability to enforce management measures, strategies and/or rules has been demonstrated. However, the fishery has demonstrated an inability to enforce the regulation that requires the mandatory landing of all by-catch.

#### **ACTION:**

Until the regulation on obligatory landing of all by-catch is amended by Norwegian Directorate of fisheries, allowing fishermen to discard accidental catches of polar cod, the client must comply with existing regulation under Marine Resource Act and land all by-catches of polar cod as required.

#### **TIMESCALE:**

By the first surveillance audit, client must present clear evidence that they comply with the regulation or that the regulation was amended allowing them to discard accidental by-catches of polar cod.

If discarding of by-catch of polar cod will be allowed, the client vessels are required to adopt a registration system which can provide clear statistical evidence on the scope of polar cod discards.

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## 2 INTRODUCTION

This report sets out the results of the assessment of the Norway North East Arctic cold water prawn fishery against the Marine Stewardship Council Principles and Criteria for Sustainable Fishing.

### 2.1 SCOPE

The Norway North East Arctic cold water prawn fishery is not conducted under any controversial unilateral exemptions to any international agreements. The fishery does not use destructive fishing practices such as poisons or dynamite, these are illegal within the management country.

### 2.2 The Unit of Certification

The MSC Guidelines specify that the unit of certification is "The fishery or fish stock (=biologically distinct unit) combined with the fishing method/gear and practice (=vessel(s) pursuing the fish of that stock) and management framework."

The fishery proposed for certification is defined as:

<b>Name of Fishery</b>	Norway North East Arctic cold water prawn fishery
<b>Species Common Name(s)<sup>1</sup></b>	Pink shrimp, deepwater prawn, deep-sea prawn, great northern prawn, crevette nordique and northern shrimp.
<b>Species Latin Name</b>	<i>Pandalus borealis</i>
<b>Stock</b>	Barents sea stock (ICES Division I and II) / FAO 27
<b>Harvest method:</b>	Bottom Trawl
<b>Management System</b>	<p>The stock is shared by Norway and the Russian Federation and managed according to ICES advice. Assessment applies to Norwegian fisheries in the Norwegian EEZ and Svalbard Protection Zone ('FPZ'), which are managed under Norwegian jurisdiction.</p> <p>The fishery is regulated by Norwegian Ministry of Fisheries and compliance is enforced by Fisheries Directorate and national Coast Guard.</p>
<b>Client name and Contact details</b>	<p>Norwegian Seafood Export Council  Strandveien 106, Postboks 6176  9291 Tromsø, Norway  Tel: 00 47 77 60 33 33  Contact: Ingrid Dahl Skarstein;  Email: <a href="mailto:ingrid.skarstein@seafood.no">ingrid.skarstein@seafood.no</a></p>
<b>Client Group</b>	<p>All vessels in the Norwegian Fleet:</p> <ul style="list-style-type: none"> <li>- Licensed offshore shrimp trawlers (over 65 foot);</li> <li>- Unlicensed onshore vessels (under 65 foot).</li> </ul>
<b>Issues of Scope</b> defined in Section 3 of FAM v2.	<u>Principle 3, Criterion A1:</u> This fishery is not conducted under a controversial unilateral exemption to an international agreement. The fishery is managed under Norwegian jurisdiction by the Ministry of

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<sup>1</sup> The terms "shrimp", "northern shrimp" and "prawn" would be used synonymously in the report.




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Fisheries with the Fisheries Directorate providing information regarding resource management as well as performing a regulatory role.

Principle 3, Criterion B14: This fishery does not use destructive fishing practices such as poisons or dynamite.

### 2.3 Report Structure and Assessment Process

The aim of this assessment is to determine the degree of compliance of the fishery with the Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fishing, as set out in Chapter 9, Section 9.5.

This report sets out:

- the background to the fishery under assessment
- the qualifications and experience of the team undertaking the assessment
- the standard used (MSC Principles and Criteria)
- Stakeholder consultations carried out. Stakeholders are all those parties that have an interest in the management of the fishery and include, but are not limited to, fishers, management bodies, scientists and Non-Governmental Organisations (NGO's)
- the methodology used to assess (score) the fishery against the MSC Standard.

MSC's default Scoring Indicators have been adopted by the assessment team for the assessment of the Norway North East Arctic cold water Prawn Fisheries. The scoring table sets out these Scoring Indicators and Scoring Guidelines which aid the team in allocating scores to the fishery. The comments in this table sets out the position of the fishery in relation to these Scoring Indicators.

The intention of Chapters 3-9 of the report is to provide the reader with background information to interpret the scoring comments in context.

Finally, as a result of the scoring, the Certification Recommendation of the assessment team is presented, together with any conditions attached to certification.

In draft form, this report is subject to critical review by appropriate, independent, scientists (peer review) and public scrutiny on the MSC website. The comments of the Peer Reviewers and stakeholders are appended to the final report.

The report, containing the recommendation of the assessment team, peer review comments and any further stakeholder comments is then considered by the DNV Governing Board (a panel of experts independent of the assessment team). The Governing Board then makes the final certification determination on behalf of Det Norske Veritas Certification AS (DNV).

It should be noted that, in response to comments by peer reviewers, stakeholders and the DNV Governing Board, some points of clarification may be added to the final report.

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### 3 THE CLIENT FISHERY

#### 3.1 Norwegian Seafood Export Council

NSEC is a public company owned by the Ministry of Fisheries and Coastal Affairs and financed by the Norwegian Seafood industry through fees levied on all exports of Norwegian Seafood.

NSEC's activities are focused on three main areas as shown in table 3.1 below.

NSCE Focus areas	Main activities
Joint marketing	<ul style="list-style-type: none"> <li>- Support sales efforts of Norwegian exporters;</li> <li>- Joint marketing activities together with partners within the Norwegian Seafood industry;</li> <li>- Increase awareness of and preference for Seafood from Norway;</li> <li>- Establish a good foundation for the individual exporters when they are promoting their products to consumers all around the world.</li> </ul>
Market Information	<ul style="list-style-type: none"> <li>- Monitor trends and developments in global seafood sales with a special focus on Norwegian Seafood.</li> <li>- Produce monthly statistics for Norwegian Seafood export;</li> <li>- Gather updated information on import quotas, tariff rates and trade conditions in the various markets;</li> <li>- Advise Norwegian exporters on current framework trade conditions.</li> </ul>
Communication and reputational risk management	<ul style="list-style-type: none"> <li>- Increase market awareness of Norwegian Seafood through corporate communication, press grants and PR activities;</li> <li>- Safeguard and strengthen the image of Seafood from Norway and contribute to social debate with accurate, updated information about Norwegian seafood products and the Norwegian Seafood industry.</li> </ul>

Table 3.1 NSEC focus areas and main activities.

NSEC has established five advisory marketing groups, one for each of the most important seafood sectors:

- Norwegian Salmon and Norwegian Fjord Trout
- Ground fish (Cod, Saithe, Haddock etc.)
- Prawns and shellfish
- Conventional products (Salted fish, Clip fish and Stock fish)
- Pelagic products (Herring, Mackerel and Capelin)

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NSEC head office is located in Tromsø, Norway while representative offices are located all over the world, including Sweden (Stockholm), Germany (Hamburg), France (Paris), Spain (Madrid), Portugal (Lisbon), Italy (Milan), Russia (Moscow), Brazil (Rio de Janeiro), Japan (Tokyo), Singapore, China (Beijing) and the USA (Boston)<sup>2</sup>.

Each year, NSEC implements around 500 marketing projects in 25 different countries all aimed at increasing demand for and consumption of Norwegian Seafood. In this context they coordinate the process of certification for Norway North East Arctic cold water prawn fishery. **NSEC, in this respect represents the whole Norwegian fleet targeting shrimp in the unit of certification.**

### 3.2 Norway North East Arctic cold water prawn fishery

ICES advice 2011	60.000 t	Estimated catch 2011, Norway	20.000 t
ICES advice 2010	50.000 t	Catch 2010, Norway	22 200 t
Landed value 2010, Norway	510 mill. NOK		

Table 3.2 Key data for Norwegian cold water shrimp fishery.

#### 3.2.1 Offshore fishery

Measured in landed value, the Norwegian shrimp fishery has been one of the most important fisheries in Norway. Norwegian vessels began offshore fishing for shrimp around 1970. Vessels from several nations entered the fishery thereafter and the catch in 1984 reached approximately 128.000 t. In the entire history of the fishery, annual catches have ranged from 5.000 to 128.000 t. The highest catch in recent years was of 83.000 t and occurred in the year 2000. Catches then declined to about 23.000 t in 2009 due to low market prices and increased vessel operating costs (NAFO/ICES, 2010).

Norwegian vessels account for around 90% of total catches of shrimp in the Barents Sea, while Russia, EU, Iceland and Greenland account for the remaining. The fishery is run by large factory trawlers which process and pack catch on board. Most of the fishing activities occurs in the central Barents Sea (the Hopen area) and on the Svalbard Shelf. The fishery operates during the entire year except when restricted by ice cover. Maximum effort occurs during May to August (NAFO/ICES, 2010). The ICES advice for 2011 is 60.000 t but the Norwegian catch is predicted to reach only 20.000 t<sup>3</sup>.

#### 3.2.2 Coastal fishery

Coastal shrimp fishery takes place along the entire Norwegian coast and comprises of small-sized trawlers that cook/boil shrimp on board. Catches are being sold primarily as fresh and cooked shrimp. Between 1977 and 2010 the annual catches by the coastal fleet varied between 4.000 and 30.000 t. Since the 1990ies the annual catches were around 5.000 t. The biggest variations in catch occurred in Troms and Finnmark. From the peak year in 1984, in the Northern provinces, there was a drop in catches from ca 25.000 to below 1.000 t per year. Main reason for this development was a radical restructuring and efficiency improvement in the shrimp industry in the Northern Norway. This led also to a situation when many of the

<sup>2</sup> Norwegian Seafood Export Council: <http://www.seafoodfromnorway.com/Fishlovers/About+NSEC>.

<sup>3</sup> Norwegian Ministry of fisheries. Site visit, 14 April 2011.

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small-scale shrimp trawlers operating in the coastal areas, were replaced by larger factory trawlers operating offshore. Landings south of 62°N have been stable at around 3.000-5.000 t. The main difference between shrimp fisheries in the north and south is that in the north it is only a marginal share of landings which comes from the coastal areas, while in Skagerrak and Norskerenna there are between 40% and 70% of shrimp landings originating from coastal fisheries. Landings from Møre, Helgelands coast, Lofoten and Vesterålen have never exceeded 1.000 t<sup>4</sup>.

### 3.3 Fleet structure

There are two types of fleet targeting shrimp in the unit of certification:

- Licensed shrimp trawlers (over 65 foot) operation offshore and;
- Unlicensed small-size vessels (under 65 foot) operating in the coastal areas

Offshore and inshore vessels are listed in Enclosure 2 and Enclosure 3 of this report. The vessel list will be updated annually in association with the audit cycle. Updated information on all Norwegian shrimp trawlers registered in Norway can also be found at [www.fiskeridir.no](http://www.fiskeridir.no).

Majority of Norwegian vessels, that have a licence for shrimp, make only 2-3 shrimp trawling trips during the year, and only 3 vessels catch shrimp all year round. This is due to the fact, that almost all Norwegian vessels targeting shrimp are cod trawlers and have quotas for other species, usually cod, haddock, and saithe. Thus, when prices for gadoid species are high, there are little incentives to target shrimp, which require greater effort and more fuel. However, in order to keep the license for shrimp, vessels have to be active in targeting shrimp at least every second year.

The variety of catch opportunities for the vessels involved in the shrimp fishery have therefore contributed to sustainable exploitation of the Barents Sea shrimp and helped to maintain the stock at the  $B_{msy}$  level<sup>5</sup>.

### 3.4 Fishing practices and gear used

Shrimp is caught by small-mesh trawl gear with a minimum stretched mesh size of 35 mm. All trawls are equipped with obligatory sorting grids, which stream by-catch of fish out of the shrimp trawl, allowing maximum reduction of by-catch of juvenile fish.

Most of the fishing vessels use double trawling, only 3 vessels use triple trawling and none use single trawling. The length of towing is around 4-5 hours, with approximately 10 t of shrimp being taken in 1 tow. Longer towing is not recommended due to quality considerations. Offshore vessels can catch up to 300-400 t of shrimp per trip, which usually last for 4-5 weeks. Smaller coastal vessels land catches daily and deliver shrimp on ice in plastic boxes.

The fishery takes place at 250 – 400 m depth in the Barents Sea. The deepest fishing ground is around 800 m. According to fishermen, shrimp can be found almost everywhere, though not always in the same volumes. The majority of vessels operate on the soft sea bed, allowing no

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<sup>4</sup> Havforskningsrapporten 2011.

<sup>5</sup> Interview with Norwegian Directorate of Fisheries, 15 March 2011.

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lasting damage to the sea bottom. Some vessels operate in the areas with a harder sea-bottom, and use rock – hopper gear. In both cases, trawl doors have a contact with a sea bottom and result in a direct impact on habitat structure. Some vessels are trying pelagic doors, which are kept off the bottom. It is expected that this practice would be more frequently used in the future in order to reduce the environmental impact on the sea bottom. There are also several ongoing projects which are aimed to develop a more effective and environmentally friendly trawl gear for shrimp fisheries. Arctic SWAN, run by SINTEF and funded through Forskingsrådet (research council), is one of such projects. Larger Norwegian companies like Aker Seafoods and Nergård Group are part of the Arctic SWAN project and currently involved in testing the new gear.

The minimum landing size of shrimp is 6cm (15mm CL), while the average size of shrimp caught by Norwegian vessels is around 7-8 cm. There are some areas in the Barents Sea, where the small sized shrimp might occur. However, only 1-3 % of total Norwegian catches of shrimp has a landing size of less than 6 cm. It should be noted that all shrimp, including undersized shrimp is landed and counted against the quota. Undersized shrimp is also being processed.



Figure 3.4 Main fishing grounds for Norwegian shrimp in the ICES areas I and II.

### 3.4.1 Commercial catches

Annual catches ranged from 5.000 to 128.000 t from 1970 to 2010. The highest catch in recent years was 83.000 t in 2000. Norwegian catches subsequently declined to about 22.200 t in 2010 due to reduced profitability of the fishery (reduced shrimp prices and increased fuel prices). The ICES advice for 2011 is 60.000 t, but the Norwegian catch in 2011 is predicted to reach only 20.000 t<sup>6</sup>.

<sup>6</sup> Norwegian Ministry of fisheries. Site visit, 14 April 2011.

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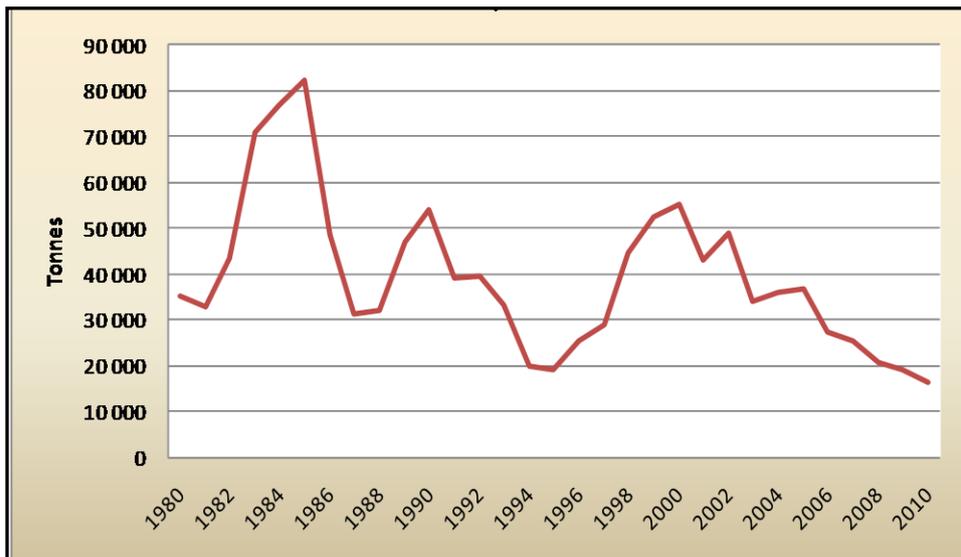


Figure 3.4.1a Norwegian catches of Northern shrimp, ICES area I and II<sup>7</sup>.

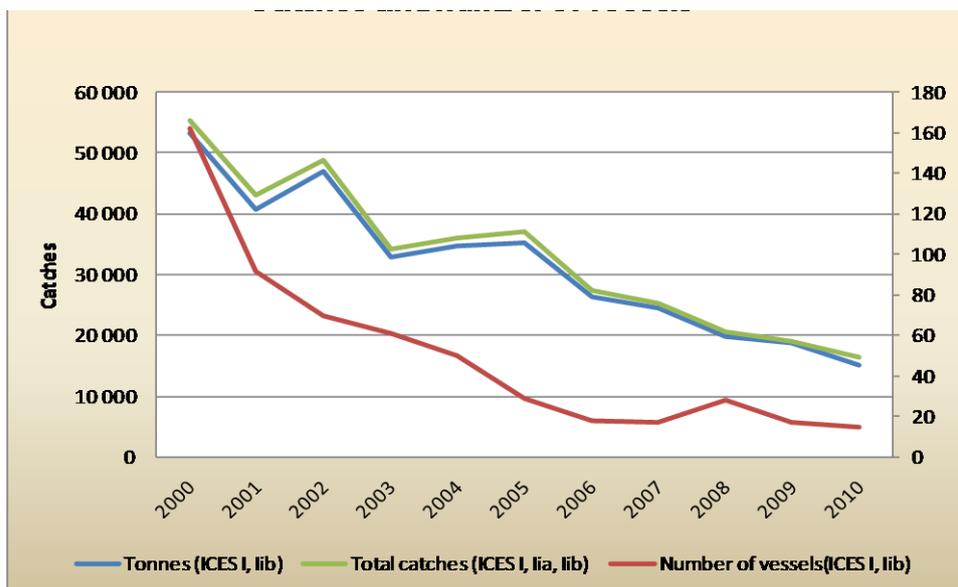


Figure 3.4.1b Annual catches and number of vessels in Norwegian fishery for northern shrimp in ICEA area I and II<sup>8</sup>.

<sup>7</sup> Source: Norwegian Directorate of Fisheries, March 2011.

<sup>8</sup> Source: Norwegian Directorate of Fisheries, March 2011.

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### 4 ECOSYSTEM CHARACTERISTICS

#### 4.1 The Barents Sea

The following overview is a summary of information contained in the ICES Arctic Fisheries Working Group (AFWG, 2010) description of the Barents Sea ecosystem.

The Barents Sea, north of the Norwegian and Russian coasts, borders with the Norwegian Sea westward, the Arctic Ocean northward and the Novaya Zemlya archipelago to the east. The area is estimated to be about 1.4 million km<sup>2</sup>. The average depth is 230 m and maximum depths of about 500 m are encountered west of the Bear Island trough. Troughs and basins, characteristic of the area, are separated by banks about 100 to 200 m deep.

The circulation, largely affected by topography, receives inflow of Arctic water and coastal water from the west. The current divides into east and north flowing branches. The ocean climate varies considerably within and between years due to variation in the inflow of Atlantic water and exchange of Arctic water.

Primary production occurs in spring. The phytoplankton bloom (predominately diatoms) is variable in timing, starting when the water column becomes stratified. It begins in the southwest and continues both north and east with the receding ice. Zooplankton (mainly calanoid copepods) feed on diatoms and provide a link between the phytoplankton and organisms at higher trophic levels. Euphasiids, which feed both on phytoplanktons in spring and on small zooplankton in other seasons, are an important source of food for fish, birds and marine mammals. Three species of amphipods are also abundant in the Barents Sea.

The benthos is diverse, likely due to the variety of habitats to which the organisms can adapt. They include active and passive filter feeders, detritus feeders, scavengers and carnivores. More than 3000 species of benthic invertebrates are found in the Barents Sea. Shrimp, scallops, king crab and snow crab are important commercial species while others, such as sea cucumbers, snails and bivalves, show potential commercial value. The benthos provides a major source of food for many important fish species and is also an important contributor to overall productivity through filter feeding, scavenging, detritus feeding and burrowing.

Northern shrimp (*Pandalus borealis*) occur in the Barents Sea with main concentrations found between 200 and 350 m. Shrimp are known to scavenge and feed on detritus, but also feed actively in the water column. They are also important food for a variety of marine organisms including fish, mammals and other invertebrates.

Although over 200 species of fish have been recorded in trawl surveys, the Barents Sea ecosystem is considered to be relatively simple in that only a few species occur in abundance. Those of commercial importance include Northeast Arctic cod, haddock, Barents Sea capelin, polar cod and Norwegian herring. Cod feed on a variety of prey and is considered to be the most important predator fish species. Herring, capelin, polar cod and blue whiting are the predominant pelagic species in the area. Redfish (*Sebastes* spp.) were an important part of the fauna but overfishing during the 1980's depleted the stocks which still remain at a low level. It is believed that the position of the Polar Front has a major effect on the distribution and abundance of the various species.

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Seals, walruses, whales, porpoises, dolphins and polar bears are the top predators within the Barents Sea ecosystem. They consume large amounts of fish and invertebrates and are thought to be a greater source of mortality than the commercial fisheries. Both fish and mammals exhibit seasonal feeding migrations resulting in more northern and eastern distributions in late summer and southern and south western distributions in winter.

Seabirds are also an important ecosystem component in the Barents Sea. They are particularly important for transporting nutrients from the sea (where they feed) to land.

Species that have very small populations or those that have shown considerable decline are listed for Barents Sea and include 28 fish species, 9 bird species and 18 mammal species. Introduced species, which might create negative environmental, economic and social impacts, include the red king crab (*Paralithodes camtschaticus*) and snow crab (*Chionoecetes opilio*).

Human activities that strongly impact the Barents Sea include fishing and hunting of marine species, transportation, oil and gas, tourism and aquaculture. Of these, fishing is believed to have the most impact on the ecosystem but biological (predation) and environmental (climate) factors are also important. Despite these activities, the low levels of contaminants in the Barents Sea are not likely to have a major impact on the ecosystem. However, as the importance of oil and gas increases, so does the need for more analyses of impacts and risk.

## 5 THE NORTH EAST ARCTIC COLD WATER PRAWN STOCK

### 5.1 The biology of the North East Arctic cold water prawn stock

The North East Arctic cold water prawn, *Pandalus borealis*, is a protandric hermaphrodite. They mature first as males but, after about 3 to 4 years they change sex and complete their lives as females (ICES, 2010). Shrimp spawn in autumn, and females carry their eggs until spring when the larvae hatch. The main fishery occurs outside the period when females are carrying eggs, which potentially reduces the impact of exploitation on recruitment.

Within a period of approximately 2 months, the shrimp larvae settle to the bottom (Aschan and Ingvalsen, 2009).

Numerous fish and marine mammal species prey on northern shrimp (Parsons, 2005) and predation mortality is thought to be an important factor in northern shrimp stock dynamics. Shrimp feed both on the ocean floor and in the water column. Therefore, their diet includes both benthic and pelagic organisms.

They are distributed throughout the Barents Sea and in the Svalbard Fishery Protection Zone (ICES Sub-areas I and II). Small and medium-sized shrimp (mostly males) predominate in southern and eastern areas in depths of 200 – 350 m while larger individuals (mostly females) occur in northern and western regions in depths of 350 -500 m (Aschan, 2000).

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## 6 STOCK ASSESSMENT

### 6.1 Assessment units

Northern shrimp (*Pandalus borealis*) in the Barents Sea and in the Svalbard fishery protection zone (ICES Sub-areas I and II) is considered as one stock (NAFO/ICES, 2010). Norwegian and Russian vessels exploit the stock in the entire area, while vessels from other nations are restricted to the Svalbard fishery zone.

The stock is assessed jointly by NAFO and ICES during meetings of the *Pandalus* Assessment Group which are usually convened in October each year.

### 6.2 Data sources

There are two main sources of data that contribute to the stock assessment process.

#### 1. Fishery data:

Logbook data from fishing vessels are used to monitor effort spatially and identify areas where shrimp concentrations occur. Logbook data from Norwegian vessel are used in a multiplicative model to produce a standardized annual catch rate index. This index, which is reflective of changes in fishable stock abundance/biomass (i.e. older males and females) over time, is included in the assessment model (NAFO/ICES, 2010).

#### 2. Research survey data:

Shrimp surveys by Russia and Norway have been conducted in their respective EEZs since 1982. These provide indices of stock biomass, abundance, recruitment and demographics. In 2004, these national surveys were replaced by a joint Norwegian-Russian "Ecosystem survey" which monitors shrimp along with other ecosystem variables (NAFO/ICES, 2010). The Norwegian shrimp surveys from 1982 to 2004 and the Joint Russian Norwegian Ecosystem surveys from 2004 to present are used as input for the assessment model.

#### 6.2.1 Egg surveys

There are no systematic egg surveys for shrimp in the Barents Sea but specific studies on shrimp fecundity have been conducted (e.g. Thomassen, 1977; Teigsmark, 1983). The research surveys, however, do provide a recruitment index for shrimp from 13 to 16 mm CL which are below commercial size and expected to enter the fishery one to two years hence (NAFO/ICES, 2010).

#### 6.2.2 Other data sources

Changes in predation, especially by cod, are believed to affect shrimp stock dynamics. Although the abundance of cod is considered during assessments, it has not been possible to establish a statistical relationship between shrimp and cod densities and, therefore, is not used as input to the assessment model.

Temperature is also important for stock dynamics. Therefore, the assessment considers near-bottom temperatures in the Barents Sea and relates the findings to changes in shrimp distribution. For example, during the 2010 survey, shrimp were only caught in areas where

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bottom temperatures were above 0°C and highest densities were found between zero and 4°C. Changes in distribution between years have been linked to changes in temperature (NAFO/ICES, 2010).

### 6.3 Assessment method

A Bayesian version of a surplus-production model is used to assess this stock (Hvingel, 2010). Two research survey indices and a commercial CPUE index are used as input. The CPUE is standardized to account for changes in fishing operations that have occurred since the mid 1990s and provides an index of the biomass of older male and female shrimp (> 16mm CL).

MSY  $B_{trigger}$ ,  $F_{msy}$ ,  $B_{lim}$ , and  $F_{lim}$  have been established and the model evaluates the stock against these reference points. Risks of falling below  $B_{lim}$ ,  $B_{trigger}$ , and MSY are calculated for catch option ranging from 30,000 to 90,000 tons. Risk of exceeding  $F_{msy}$  and  $1.7F_{msy}$  are derived similarly.

The model was designed for shrimp and the outputs evaluate the risks in violating reference points which are based on MSY and Precautionary approaches. Although measures of stock status are relative ( $B/B_{msy}$ ,  $F/F_{msy}$ ) rather than absolute, the assessment is considered indicative of stock trends. Risk of exceeding or falling below reference points over a range of catch options addresses additional uncertainty. However, large and sudden changes in recruitment may not be fully captured in model predictions. Also, should predation on shrimp increase rapidly, outside the historical range, the stock could decrease more than the model results indicate.

In addition to model output, the assessment considers a shrimp recruitment index, shrimp as prey for other species (especially cod) and the effects of changes in temperature on shrimp distribution. The recruitment index provides short-term (1 to 2 years) predictions for the fishery. Attempts at including cod predation as an effect in the model have not been successful as the relationship between shrimp and cod densities has not been established. Changes in bottom temperature have been used to explain changes in shrimp distribution between years.

### 6.4 Stock status

The shrimp stock in the Barents Sea and in the Svalbard Fishery Protection Zone (ICES Sub-areas I and II) is assessed as a single stock. The most recent stock assessment, conducted by NAFO/ICES in October, 2010, concluded that biomass has been above  $B_{msy}$  throughout the history of the fishery and that, at the end of 2010, was well above  $B_{msy}$ . Recruitment indices from surveys indicated that abundance of shrimp from 13 to 16 mm CL (one to two years from the fishery) decreased from 2004 to 2008 but was higher in 2009 and 2010.

Stock biomass was estimated to be close to carrying capacity (K). The risk of biomass being below  $B_{msy}$  at the end of 2010 is 3% and less than 1% of being below  $B_{trigger}$  and  $B_{lim}$  (NAFO/ICES, 2010).

Although predation and environmental conditions are considered within the scope of the assessment, these factors have not yet been incorporated in the assessment model.



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### 6.5 Management advice

Annual assessments provide guidance for management tools and data requirements for the assessment model and ensure that stock abundance and catch are appropriately monitored. Although there is no TAC established for this stock, the fishery is regulated through effort control. Licenses to fish shrimp are required for Russian and Norwegian vessels which are also subjected to by-catch regulations. In addition to by-catch regulations, third party fleets operating in the Svalbard zone are restricted by the number of effective fishing days and the number of vessels by country. The regulated minimum stretched mesh size for shrimp trawls is 35 mm. Other species which occur on the shrimp fishing grounds are protected by mandatory sorting grates and by the closing of areas where by-catch of juvenile cod, haddock, Greenland halibut, redfish or shrimp <15 mm CL is expected to be high, despite the use of grates (NAFO/ICES, 2010).

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### 7 ASSESSMENT OF ECOSYSTEM INTERACTIONS

#### 7.1 Retained species and by-catch

The MSC Fisheries Assessment Methodology (FAM v2.1, 2010) defines retained species as “those parts of the retained catch that are not covered under Principle 1 because they are not included in the Unit of Certification. However the retained catch can still be a valuable catch in the fishery, whether it is targeted or taken incidentally, and there is thus an economic incentive for capture.” Shrimp license holders or operators in the Barents Sea do not retain other species for commercial purposes. Regulations require that by-catch be “retained” and landed for monitoring, but not for its value. However, there is limited information from the landed by-catch and some species are exempt from the regulation. Thus, for this assessment, the issue of incidental catches in the shrimp fishery is addressed as by-catch and the only retained species is the target species which is shrimp.

Since the mandatory use of the Nordmøre sorting grid (1992), small cod, haddock, Greenland halibut, capelin and redfish (5–25 cm) are the only commercial species taken as by-catch. Grids are designed to minimize by-catch and, in this respect, they are highly effective. However, smaller fish of several species that can pass through the grid spacing (22 mm) are caught but, for this fishery, the evidence suggests that the amount is negligible. One and two year old cod overlap in distribution with shrimp in the central area of the Barents Sea and around Svalbard and by-catch in these fishing areas has been regulated by area closures since 1983. Regulated limits on by-catch (number of fish per 10kg of shrimp) are cod 8, haddock 20, redfish 3, and Greenland halibut 3 (IMR). By-catch estimates since 1992 are: small cod 2–67 million fish/yr; redfish 2–25 million from 2000 -2004 ; haddock 1–9 million and Greenland halibut 0.5–14 million (Hvingel and Thangstad, 2010). Recently, there has been a decline in by-catch due to reduced effort in the shrimp fishery (NAFO/ICES, 2010).

By-catch of species other than shrimp is estimated from surveillance and research surveys. The by-catch rates in specific areas are then multiplied by the corresponding shrimp catch from logbooks to estimate the overall by-catch. A comprehensive list of by-catch species (IMR, unpublished) other than those mentioned above includes: anglerfish, argentines, Atlantic halibut, Atlantic wolffish, blue ling, common sole, European hake, European plaice, greater argentine, ling, long rough dab, lumpsucker, pollock, rainbow trout, right eye flounders (unspec.), roughhead grenadier, roundnose grenadier, saithe, skates and rays (unspec.), spotted wolffish, tusk, whiting and wolffishes (unspec.). The overall by-catch is estimated between 1-3% and is below FAO limit of 8%. Furthermore, it is estimated that by-catch is less than 1% per by-catch species. This minimizes the risk of serious or irreversible harm to by-catch species or hindering recovery of any depleted by-catch species. ICES (2010) concluded that, overall, by-catch is relatively small due to the sorting grates and area closures.

These controls are enforced by the Norwegian Coast Guard.

The Nordmore grate and excluder devices, in general, are recognized internationally as an effective means of by-catch reduction (e.g. Hannah and Jones, 2007; Richards and Hendrickson, 2006). The development of the Nordmore sorting grate required several years of development and testing. The fact that various types of “excluder devices” are used

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worldwide provides a high degree of confidence that a management strategy which includes them will be effective.

Based on the low levels of by-catch observed in the fishery (less than 1% per by-catch species), the fishing mortality on all species is considered to be negligible. Studies on the survival of fish species that escape the trawl via the sorting grid have shown some damage with respect to visible skin injuries and scale loss. However, no firm conclusions on escape mortality have been reached (e.g. Soldal and Engas, 1997).

### 7.2 Endangered, Threatened and protected species (ETP)

The ETP species on the 2010 Norwegian Red List (Gjosaeter et al. 2010) relevant to this fishery are redfish (*Sebastes marinus* and *S. mentella*), blue ling (*Molva dypterygia*) and pollock (*Theragra finnmarchica*). Several skates and rays are also listed but only the spinytail skate (*Bathyraja spinicauda*) occurs in the Barents Sea survey area (IMR unpublished) and might occur as by-catch. The by-catch of redfish is limited to 3 fish per 10 kg of shrimp and, should this limit be exceeded, vessels are required to move to another area. There are no by-catch limits for the other listed species. Generally, the sorting grate ensures that the by-catch is minimal for all species. Also, large areas in the northeast part of the Norwegian EEZ have remained closed due to high encounters with redfish.

The mandatory use of sorting grates and the implementation of permanent and temporary closed areas as required are effective for minimizing the by-catch of all species. Furthermore, discarding is prohibited and there is a requirement for by-catch to be landed. These controls are enforced by the Norwegian Coast Guard and there is no indication of serious violations.

This fishery is considered to be relatively small (recent catches of around 20.000 t) and by-catches have been estimated (quantitatively) to be less than 1% per species (IMR). It has been demonstrated that the fishery has a negligible effect on all by-catch species and the related fishing mortality is negligible and close to zero. ICES (2010) concluded that, overall, by-catch is relatively small due to the sorting grates and area closures.

### 7.3 Habitat and ecosystem impacts

Habitats within the marine ecosystem of the Barents Sea/Svalbard and Norwegian Sea areas are relatively well known. Joint Norwegian/Russian ecosystem surveys have been performed in this area, examining habitat characteristics. In addition, the area is the focus of a large amount of research by IMR and Universities of Bergen and Tromsø (Norwegian Ministry of the Environment, 2005; Stiansen et al., 2006; Anon. 2006).

Some data sets extend back to the 1930s. The results of these ongoing research programmes underpin the Barents Sea Management Plan (BSMP). The earlier programmes established a broad understanding of the main impacts of gear use on the main habitats (PROMARE).

The more recent and ongoing MAREANO programme is comprehensive and provides a high level of knowledge on the nature, distribution and vulnerability of all main habitat types and enhances the understanding of the impacts of trawling on main habitats of the area of fishery (MAREANO).

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Shrimp trawling near coral reefs is prohibited by regulation and several reefs are protected as marine protected areas<sup>9</sup>. Section 19 of the Marine Resources Act states that habitats deemed to require protection can be permanently closed on short notice (Havressurslova (Marine Resources Act, 2008)).

Modern shrimp trawls are relatively light with minimal contact with the substrate and it is generally believed that fishing for shrimp causes negligible damage to habitat structure and function. Trawl doors, however, when contacting the ocean floor, cause some scouring. The use of bobbins and rockhopper gear is prohibited within 12 nautical miles from coastline.

Several studies on the impacts of shrimp trawling on soft ocean substrate did not detect any clear and consistent effects attributable to trawling (see Lokkeborg, 2004). Although knowledge on the impacts of shrimp trawling is rudimentary, it appears highly unlikely, that the fishery would reduce habitat structure and function to a point where there would be serious or irreversible harm. This conclusion is supported by a recent analysis (IMR, unpublished) that compared the area trawled by the fishery with the known area of shrimp habitat in the Barents Sea. Shrimp habitat was estimated to be approximately 850,000 km<sup>2</sup> and the area fished, about 15,000 km<sup>2</sup>, or 1.74%.

The Barents Sea has a muddy, mobile habitat. The study of experimental trawling in this region indicates that trawling affects the benthic assemblage mainly through relocation of shallow burrowing infaunal species to the surface of the seafloor and the re-suspension of surface sediment. (Stiansen et al. (2006)).

The Integrated Management Plan for the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands was presented by the Norwegian Government in 2006. The MAREANO project<sup>10</sup> is coordinated by the Institute of Marine Research, the Geological Survey of Norway and the Norwegian Hydrographic Service. The project is financed by contributions from the National Budget through the Ministry of fisheries and Coastal Affairs, the Ministry of Environment and the Ministry of Trade and Industry. The project is expected to fill in the knowledge gaps related to seabed conditions and biodiversity defined in the Integrated Management Plan.

### 7.4 Other Fisheries Relevant to this Assessment

There are no other fisheries which pose a significant impact on Barents Sea shrimp population in the unit of certification or are relevant to this assessment. Trawl fisheries for ground-fish species operating in the same geographical area use mesh sizes which would not retain shrimp, and therefore do not have any by-catch of shrimp.

### 7.5 The North East Arctic cold water prawn fisheries impact on the surrounding ecosystems

IMR has a substantial body of information on key elements of the ecosystem (principally commercial species, predators and prey) to enable the main impacts of the fishery for the ecosystem to be investigated. The ECOSIM methodology has been used to develop a mass balance trophic model of the Barents Sea. The impacts of potential changes in shrimp levels,

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<sup>9</sup> Norwegian Directorate of Fisheries: [fiskeridir.no/fiskeridir/english/resource-management/marine-protected-areas](http://fiskeridir.no/fiskeridir/english/resource-management/marine-protected-areas)

<sup>10</sup> [www.mareano.no](http://www.mareano.no)

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due to fishing and other potential causes, have been examined by these models. ECOSIM models (using a proxy for shrimp) suggest that under the current catch levels for shrimp there are no major trophic perturbations. The models allow for temporal and spatial simulation of alternative fishing as well as environmental change scenarios to be examined on ecosystem components. However, trophic relations of larval and juvenile stages have not been well developed.

The simulation models developed for the Barents Sea are based on information collected as a result of stomach content research as well as other investigations that support the management plan for the ecosystem. However, information is lacking for many non-commercial species.

IMR also has substantial information to support the development of strategies to manage ecosystem impacts. The Marine Resources Act and other related regulations provide sufficient data collection to identify increase in risk level. This is also supported by ongoing research cruises and the MAREANO program<sup>11</sup>.

Knowledge of the food web related to shrimp is available for the Barents Sea. Shrimp are important prey for many marine species in the Barents Sea, but are not known to be a critical component in diet of any predator. Shrimp feed on a variety of prey, including the phytoplankton, zooplankton and detritus. Fluctuations in the cod stock have been associated with shrimp abundance; however a statistical correlation has not been established. Impacts of temperature on shrimp distribution patterns are also being examined (Stiansen et al. 2006; Anon, 2006; Dingsør et al. 2007; Blanchard et al. 2002).

The impact of the fishery on the target and by-catch species is assessed annually during the NAFO/ICES stock assessments. The current level of the shrimp stock in the Barents Sea (ICES area I and II) is estimated to be near carrying capacity. The by-catch is sufficiently small to be considered negligible. Furthermore, measures such as the regulation to land by-catch, the mandatory use of sorting grates, the implementation of closed areas and marine protected areas are in place to protect by-catch species and sensitive habitats as much as possible. A recent analysis (IMR, unpublished) showed that the area trawled by the fishery (about 15,000 km<sup>2</sup>) is less than 2% of the estimated shrimp habitat in the Barents Sea (about 850,00 km<sup>2</sup>). Improved trawl design and use of low sulphur fuel result in reduced emissions from fishing activity. It is believed that clay/silt bottom sustains minimal damage from shrimp trawling and fauna is restored back to its original status after 3 months. Species diversity is also largely unaffected due to the continued abundance of shrimp (the target species) on the fishing grounds and the negligible level of by-catch in the fishery resulting from avoidance measures described above.

Regulations within the Marine Resources Act provide a means to restrain the ecosystem impacts. The Act allows for the designation of further closed areas for ecosystem protection, as well as development of alternative management approaches as deemed necessary to protect the ecosystem.

Although the complexity of ecosystem functional relationships is not fully understood, the fishery does not appear to pose any immediate risk to ecosystem components. This is evidenced by the general understanding of ecosystem dynamics through modelling, the low impact of trawling on habitat, the negligible by-catch, the health of the target stock and the absence of any significant negative ecosystem perturbations over the past half century. No unacceptable impacts of the fishery on ecological systems within major fishing areas were evident.

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<sup>11</sup> [www.mareano.no](http://www.mareano.no)

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### 8 FISHERIES MANAGEMENT IN THE UNIT FOR CERTIFICATION

#### 8.1 Cooperation on shared and migratory fish stocks

The Northern shrimp stock complex is managed as one stock, and the responsibility to manage shrimp fisheries is shared by Russia and Norway, both ICES members. ICES, in cooperation with Russian (PINRO) and Norwegian (IMR) marine research institutions monitor the stock and the fishery. Shrimp north of 70° N on the Norwegian coast is regarded to be a part of the Barents Sea population.

The Russian EEZ is beyond the scope of this certification process, however, a TAC is established in this zone and a smaller portion (ca 2000 t annually) is allocated to Norwegian vessels. Russian and Norwegian vessels are allowed to exploit the stock in the entire area open for fishery. Vessels from other nations are restricted to the Svalbard fishery zone.

The shrimp fishery subject to this assessment is restricted to Norwegian fisheries within ICES areas I and II and is under Norwegian jurisdiction.

#### 8.2 Management objectives

There is no overall TAC established for this stock. A partial TAC, effective in the Russian zone only, is established.

A new Marine Resources Act<sup>12</sup> has modernized the legislation and replaced a number of old laws. Under this act Norwegian authorities are obliged to establish and enforce a sustainable and economically profitable management regime for all fisheries. Total catches of shrimp in the defined area have been far below levels corresponding to the reference and limit levels. The stock biomass indicators and the past and present level of fishing effort secures that the fishery is sustainable even without an established TAC.

The Norwegian government has no intention of establishing a TAC for areas under Norwegian jurisdiction in contrary to ICES advice. Establishing of an explicit harvest control rule is under consideration to comply with international standards. The fishery is regulated by access control executed as effort control (fishing days) and licensing, gear parameters such as mandatory use of sorting grates (22mm between bars), mesh size regulations (35 mm) and extensive use of area closures when small shrimp (< 15mm CL) or small fish (red fish, Greenland halibut, cod and haddock) are present in catches above defined limits.

Combined, these regulatory measures are considered to constitute an implicit management objective.

##### 8.2.1 International /EU level

In the Fishery Protection Zone around Svalbard, where vessels from nations with a track-record in the shrimp fishery are allowed to fish, an effort regulation scheme has been in force since 1996. A maximum number of vessels and fishing days per year are the main features of this effort system.

The total fishing effort has in recent years been far below allowed levels. The plausible explanation is low profitability due to high fuel prices and low prices of shrimp.

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<sup>12</sup> Havressuslova: Act relating to the management of wild living marine resources.  
<http://www.regjeringen.no/upload/FKD/Vedlegg/Diverse/2010/MarineResourcesAct.pdf>

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### 8.3 Management responsibilities and interactions

#### 8.3.1 International level

A common NAFO and ICES work group, NIPAG (NAFO-ICES Pandslus Assessment Group), deal with stock estimation and catch and offer management advice. Russian (PINRO) and Norwegian (IMR) marine research institutions supply NIPAG with data and analysis (survey data, fisheries statistics and stock assessments). In October every year the work group meets and produces an assessment report<sup>13</sup> which is the basis for advice presented by ICES Advisory Committee in November<sup>14</sup>.

#### 8.3.2 National level

The Norwegian management responsibility includes enforcement of regulations aimed at controlling fishing effort and limit by-catch to a minimum. Fishing effort is controlled by three measures:

- i. Fishing licences: By the end of 2009 62 vessels larger than 65 feet had a permit to trawl shrimps north of 62° N. The fishery is open for vessels smaller than 65 feet and 71 vessels landed catches in 2010. Larger vessels with permits are not allowed to fish inshore.
- ii. Size limitations on cargo capacity: It is a general size limitation on cargo capacity up to 1500 m<sup>3</sup> and a limitation on utilization of more than 400 m<sup>3</sup>. When permits are merged the limitation on utilization is raised to 600 m<sup>3</sup>
- iii. Fishing days. The maximum number of fishing days per nation was reduced by 30 %, effective from January 1st, 2006 according to a shift in technology<sup>15</sup>. Allocation of fishing days in 2011 are:
  - Russia: 3 256
  - The European union: 1 080
  - Iceland: 70
  - Greenland: 450
  - Faroese islands: 922
  - Canada: 108
  - Norway: 5 795

The bulk of the vessels holding licences for shrimp trawling are located in the three northernmost Norwegian counties. Only a few vessels have shrimp fishery as their sole occupation, most vessels hold shrimp trawling licenses as supplement to other licences, most common cod trawl license.

Limitation of by-catch is enforced by the following set of rules and surveillance program:

- i. Use of sorting gird in shrimp trawls is mandatory and the minimum mesh size in shrimp trawls is 35 mm.

<sup>13</sup> <http://www.ices.dk/reports/ACOM/2009/NIPAG/scsdoc%2009-27%20NIPAG%20Report.pdf>

<sup>14</sup> <http://www.ices.dk/committe/acom/comwork/report/2009/2009/pand-barn.pdf>

<sup>15</sup> Use of double and triple trawls.

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- ii. Surveillance of fishing grounds in real time in the Barents Sea/Svalbard area to avoid by-catches of small/undersized fish. The program is operated by the Directorate of fisheries.
- iii. Areas are immediately closed for shrimp trawling, and not opened until new surveillance data is available, when the intermixture of undersized fish per 10 kg of shrimp exceeds the following allowed numbers:
  - Cod: 8
  - Haddock: 10
  - Redfish: 3
  - Greenland halibut: 3

According to § 15 in the Marine Resources Act there is an obligation to land all catch. This includes all by-catch of fish. The law offers an opportunity, by secondary law, to give exceptions to the landing rule. Hitherto, no such secondary law has been passed.

### 8.4 Legislation

The shrimp stock in ICES area I and II are shared with Russia. While the Norwegian EEZ is closed to foreign vessels, the Fishery Protection Zone around Svalbard is open to vessels from other nations, including Russia.

The Norwegian EEZ was established from January 1<sup>st</sup> 1997<sup>16</sup> and the Svalbard, a fishery protection zone, was established in 1977<sup>17</sup>. The Svalbard treaty of 1920 states Norway's legal right to establish the zone<sup>18</sup>. The legal regime for the exclusive economic zone is enshrined in the UN Law of the Sea Convention of 10 December 1982. This provides the basis for Norwegian jurisdiction over the fishery subject to this assessment.

The Norwegian fisheries legislation has been developed over a period of more than 100 years. Modern legislation is a response to international law, development of knowledge in marine ecology and economy as well as national politics. The new Marine Resources Act<sup>19</sup> (from 2008) incorporates earlier legislation, but also states a major shift in paradigm from laws protecting the industry to laws protecting the marine ecosystem as well as marine resources<sup>20</sup>. The main objective of the act is to “*ensure sustainable and economically profitable management of wild living marine resources and genetic material derived from them, and to promote employment and settlement in coastal communities*”. The Act on participation in Fisheries<sup>21</sup> regulates access to fisheries, and is the basis for fishing licenses in the shrimp trawling fleet as well as licenses in other fisheries. These laws confirm the legal basis for all regulations and the measurements described above (see paragraph 8.3.2).

The modernization allows environmental concerns, a precautionary approach, welfare, economics and geographical distribution of fishing rights as well as the profitability of the industry to be taken into account when the concrete regulations are prepared, formulated in

<sup>16</sup> The Act of 17 December 1976 relating to the economic zone of Norway, also called the Zone Act.

<sup>17</sup> [http://www.fisheries.no/resource\\_management/Area\\_management/economic\\_zone/](http://www.fisheries.no/resource_management/Area_management/economic_zone/)

<sup>18</sup> <http://www.regjeringen.no/nb/dep/fkd/tema/ressursforvaltning/fiskevernsonen-ved-svalbard-og-fiskeriso-2.html?id=445285>

<sup>19</sup> <http://www.regjeringen.no/upload/FKD/Vedlegg/Diverse/2010/MarineResourcesAct.pdf>

<sup>20</sup> Holm P. (2001). The Invisible Revolution. The Construction of Institutional Change in the Fisheries. Norwegian College of Fishery Science. University of Tromsø. Tromsø

<sup>21</sup> [http://www.fisheries.no/resource\\_management/Fishing-Fleet-Capacity/Participation/](http://www.fisheries.no/resource_management/Fishing-Fleet-Capacity/Participation/)

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secondary laws and executed. All laws and secondary laws are communicated to the industry and the public in general through the press and official web sites. Surveillance schemes are also legitimized, planned and executed in accordance to the mentioned laws.

The Raw Fish Sales Act<sup>22</sup> gives sales organizations, controlled by the fishermen, a sole right to first hand sales of marine fish and shellfish. In return, the sales organizations have accepted to regulate the execution of fisheries, when required to restrict market supply and control of all landings.

### 8.5 Consultative process

As mentioned above, the Norwegian fisheries legislation has been developed over a long period. So has a system for consulting and involving the industry, other stakeholders, the national and international scientific community and relevant governmental bodies in deciding annual fisheries regulations. The decision process, called the regulatory chain, is presented in the **Figure**<sup>23</sup> below.



Figure 8.5: The regulatory chain as presented on [www.fisheries.no](http://www.fisheries.no)

Relevant stakeholders are invited to the Advisory Board for Fisheries Regulations (representatives from the Norwegian Fishermen's Association, Federation of Norwegian Fishing Industries, the Norwegian Seamen's Union, The Norwegian Food and Allied Workers' Union, The Sami Parliament, environmental NGOs, the regional counties, as well as recreational fishermen).

The regulatory chain is described as an interactive and iterative process based on incremental changes<sup>24</sup>. The legal basis for the chain is presented above (paragraph 8.4), so are the scientific contributions (paragraphs 8.2 and 8.3). This process ensures that all relevant parties are consulted in the decision process. ICES quota recommendations and all proposals

<sup>22</sup> Of June 29th 1951 NO 31

<sup>23</sup> [http://www.fisheries.no/resource\\_management/setting\\_quotas/The-regulatory-chain/](http://www.fisheries.no/resource_management/setting_quotas/The-regulatory-chain/)

<sup>24</sup> [http://www.fisheries.no/resource\\_management/setting\\_quotas/The-regulatory-chain/](http://www.fisheries.no/resource_management/setting_quotas/The-regulatory-chain/)

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## MSC FISHERY ASSESSMENT REPORT

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presented to the Advisory board are public, and easily available to the public on the respective websites of ICES<sup>25</sup> and the Fisheries Directorate<sup>26</sup>. The Regulatory Board discusses and makes suggestions on

- when to start and stop the fishing
- technical regulations
- size of by-catch
- criteria's for participating in various fisheries .

The Directorate of Fisheries recommends the following year's fisheries regulations to the Ministry of Fisheries and Coastal Affairs. The Ministry bases its final decision on outcomes from the quota negotiations with other states, discussions from the open meeting, the recommendation from the Directorate of Fisheries, as well as input from various fisheries industry organizations.

It should be noted that no documents on regulation of the Svalbard/Barents Sea shrimp fishery have been presented to the Regulatory Board in recent years. The explanation is that since there is no TAC there is no need to put the regulation for this fishery through an annual decision process. All regulations regarding rigging and use of fishing gear and intermixture of by-catch are formulated in "Secondary law on practice of the fishery in the sea<sup>27</sup>". The Civil Service Act<sup>28</sup> states strict rules for consulting stakeholders, and ensures that all relevant stakeholders have the right to be heard in all law making processes. However, any stakeholder can present proposals to the Regulatory Board, but this has not been the case for this fishery. The vessel owners, through their organizations have asked for an evaluation of the allowed intermixture of undersized fish. This must be put through a hearing process in accordance with the Civil Service Act.

Possible changes in fishing days in the Svalbard zone must be presented to and agreed upon in the joint Norwegian/Russian Fishing Commission<sup>29</sup>.

## 8.6 Enforcement and control

### 8.6.1 Reporting systems for fishing vessels

In agreement with the Marine Resources Act a secondary act gives rules and guidelines for keeping logbooks on Norwegian fishing vessels<sup>30</sup>. In accordance with these rules all vessels longer than 13 m are obligated to log all catches. The rules for vessels larger than 15 m are more wide-ranging and the requirements for logging of data are more detailed. According to the rules in the secondary law all vessels larger than 13 m, trawling for shrimps inshore and offshore north of 62° N, are obligated to keep logbooks. The minimum requirements are registration of vessel data, gear type, catch area/ location, catch specified by species in addition to specification of buyer and the end note number (see later). The requirements for vessels larger than 15 m are more detailed and shrimp trawlers in addition have to report data

<sup>25</sup> <http://www.ices.dk/advice/icesadvice.asp>

<sup>26</sup> <http://www.fiskeridir.no/fiske-og-fangst/sakspapirer-referater/reguleringsmoetet-16.-og-17.-november-2010>

<sup>27</sup> <http://www.fiskeridir.no/fiske-og-fangst/j-meldinger/gjeldende-j-meldinger/j-64-2011>

<sup>28</sup> <http://www.lovdato.no/all/nl-19670210-000.html>

<sup>29</sup> [http://www.fisheries.no/resource\\_management/setting\\_quotas/quota\\_negotiations/](http://www.fisheries.no/resource_management/setting_quotas/quota_negotiations/)

<sup>30</sup> <http://www.fiskeridir.no/fiske-og-fangst/j-meldinger/gjeldende-j-meldinger/j-85-2011>

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on time, positions and catch composition on each haul. Copy of the logbook must be kept on board for at least two years. All shrimp trawlers fishing outside 12 nautical miles from the shore line must send the original logbook to the Directorate of Fisheries within one month after ended fishing trip.

Effective from January 1<sup>st</sup> 2011 all vessels longer than 15 m have to keep electronic logbooks (see **Figure** ) and report on-line every day (no later than 23:59 UTC) to the Directorate of Fisheries<sup>31</sup>.

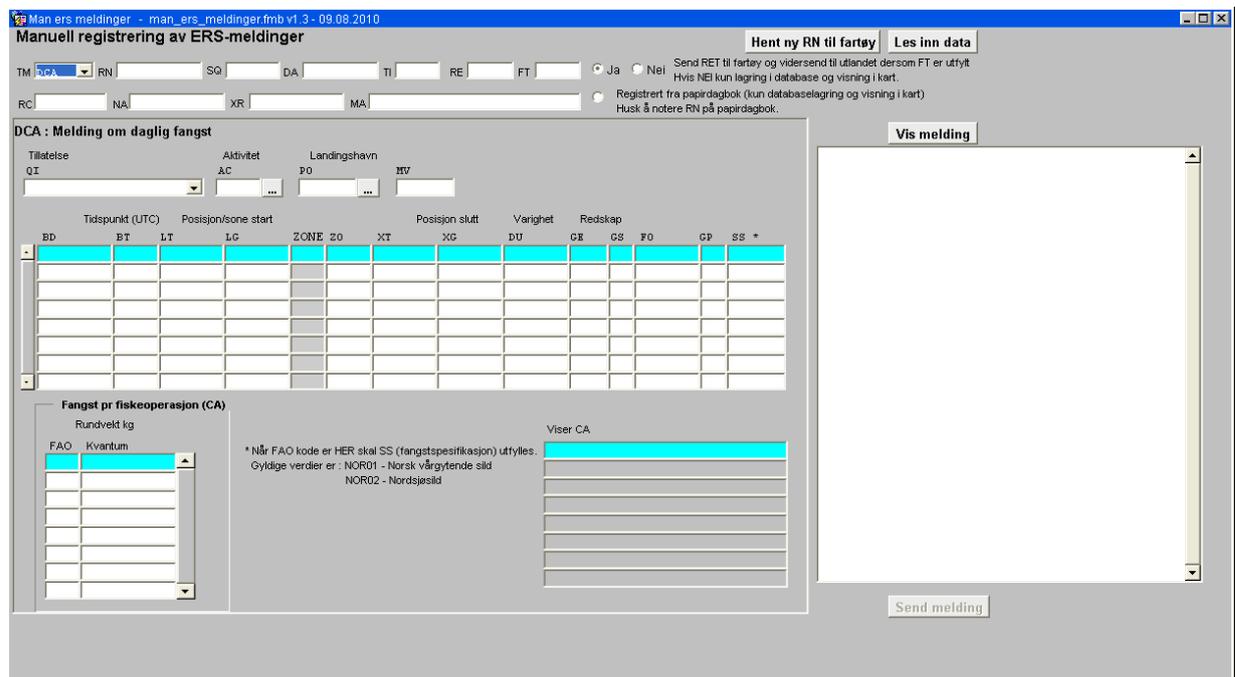


Figure 8.6.1: The electronic logbook and reporting system on board Norwegian fishing vessels longer than 15 m.

The scope of the Norwegian reporting system for fishing vessels<sup>32</sup> from January 1<sup>st</sup> 2011 includes electronic reporting and position reporting for all vessels longer than 15 m. The bulk of all shrimp catches is covered by the system. The new electronic reporting system facilitate the fishermen`s reporting duties and is considered vital in connection to the resource control and to obtain accurate catch statistics.

The position system automatically transmits the vessel`s position, course and speed once an hour, 24 hours a day, regardless of where the vessel is located, to the Norwegian Fisheries Monitoring Centre” (FMC) at the Directorate of Fisheries. Foreign vessels operating in waters under Norwegian jurisdiction report position and catch to their home country and the reports are forwarded to the Directorate of Fisheries. Vessels, Norwegian or foreign are not allowed to fish in waters under Norwegian jurisdiction if the system is malfunctioning. The following (shortened) description of the FMC is presented on [www.fisheries.no](http://www.fisheries.no):

*“In accordance with international agreements Norway has established a FMC at the Directorate of Fisheries in Bergen. The FMC controls that position reports and electronic catch and activity reports are received on a regular basis. Most of the data stored at the Norwegian FMC is only made available to authorised personnel. Such personnel are bound by the Official Secrets Act. Data concerning individual fishing*

<sup>31</sup> <http://www.fiskeridir.no/fiske-og-fangst/j-meldinger/gjeldende-j-meldinger/j-13-2011>

<sup>32</sup> [http://www.fisheries.no/resource\\_management/control\\_monitoring\\_surveillance/Reporting-systems-for-fishing-vessels/](http://www.fisheries.no/resource_management/control_monitoring_surveillance/Reporting-systems-for-fishing-vessels/)

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## MSC FISHERY ASSESSMENT REPORT

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*vessels will not be generally available. Neither will the data be available to other fishing vessels. Only the Norwegian Search and Rescue Centres have access to tracking details in addition to authorised personnel in the Directorate of Fisheries and the Coast Guard.”*

With the electronic reporting system the FMC enables the Directorate of Fisheries to keep all foreign and Norwegian<sup>33</sup> shrimp trawlers under real time surveillance. At any given time there will be a complete list of vessels longer than 15m participating in the shrimp fishery comprising catch, position and fishing days. This gives the authorities full control over number of vessels in the Svalbard zone and fishing days used. The Coast Guard has access to the same information and the position of all participating vessels within the last hour and uses the information as a basis for their surveillance and inspection of vessels at sea.

### 8.6.2 Level of compliance

There is no reason to believe that the level of compliance ever has been low in the shrimp fishery. The surveillance program in the Barents Sea, the reporting system and the inspection of vessels at sea ensures that fishing activity is under strict control.

In the Norwegian Coast Guards annual report from 2010<sup>34</sup> there are no specific remarks regarding shrimp trawling in the Norwegian Zone or in the Svalbard zone. The remarks are linked to other fisheries. When illegal fishery activities are reported in the press, shrimp trawlers very seldom are involved. Together this indicates a high level of compliance.

### 8.6.3 Inspection at Sea

There are two types of inspections at sea; the surveillance program in the Barents Sea and the Norwegian Coast Guards surveillance of the fishing fleet.

In the late 1980s, Norway introduced a surveillance program in the Barents Sea. The program is described as follows (shortened) on [www.fiseries.no](http://www.fiseries.no)<sup>35</sup>:

*“ This is a program for closing and opening of areas on a real time basis to avoid the catching of undersized fish and intermixture of unwanted species. The commercially most important species in the Barents Sea are covered by the program. Commercial fishing vessels are hired to investigate the fishing grounds, with specially assigned inspectors on board. Specific criteria relating to intermixture are laid down as basis for closure. When investigations reveal that the criteria are fulfilled, the area will be closed. Information on relevant areas to investigate is received from scientists, from the Coast Guard and from the fishing fleet. Closed areas are re-examined after a period to control if there still is a basis for keeping them closed. If the intermixture of juveniles in the catches no longer exceeds the permitted levels, the closed areas are reopened for fisheries.*

*The concept of closure and opening of areas has been developed in close co-operation with Russia with whom Norway shares important stocks in the Barents Sea. The program is an extremely important instrument for achieving rational exploitation*

<sup>33</sup> Longer than 15 m.

<sup>34</sup> Årsrapport for Kystvakten 2010

<sup>35</sup> [http://www.fisherier.no/PageFiles/21748/HSM/pdf\\_vedlegg/Norsk\\_svar\\_paa\\_EUs\\_groennbok\\_om\\_CFP\\_reform.pdf](http://www.fisherier.no/PageFiles/21748/HSM/pdf_vedlegg/Norsk_svar_paa_EUs_groennbok_om_CFP_reform.pdf)

## MSC FISHERY ASSESSMENT REPORT

*patterns in the fisheries in these areas. The recovery of the cod and haddock stocks in the Barents Sea, which both were in a poor state some years ago, can probably be linked to this program of temporary closure of areas.*

*Moreover, this regulation is also highly recognized and respected by the fishermen, with whom it has gained a high degree of legitimacy.”*

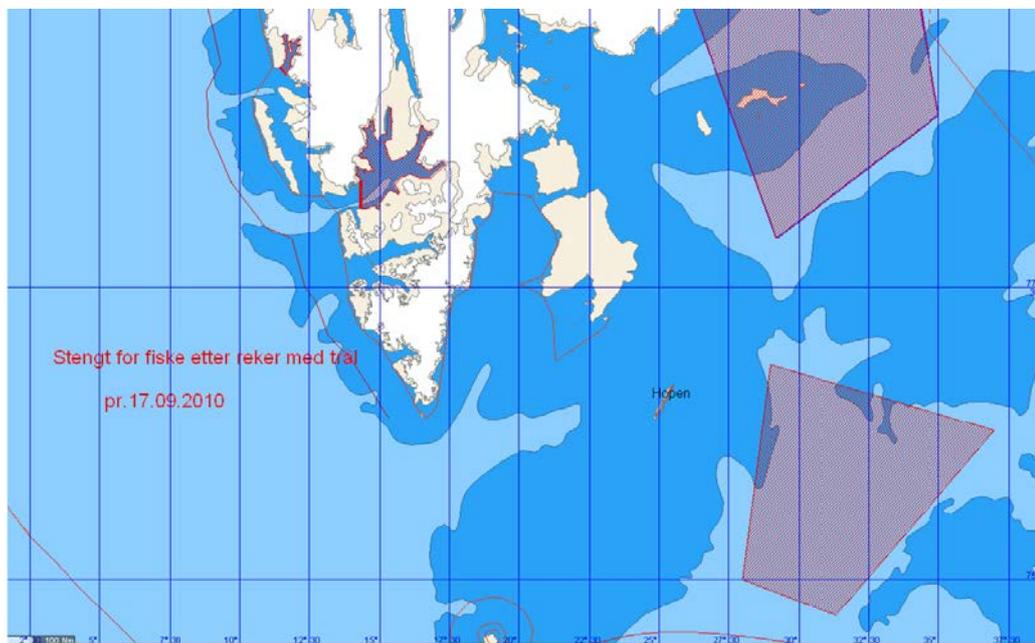


Figure 8.6.3 : An example of closed area in the Fishery Protection Zone around Svalbard.

### 8.6.4 Landing Control

The Norwegian sales organizations play an integral part in the Norwegian management and control system. By law (the Raw Fish Act<sup>36</sup>) the fishermen, through the sales organizations, control all firsthand sales of fish and shellfish from Norwegian as well as foreign vessels. Norges Råfisklag is the biggest of the five sales organizations and is responsible for the largest part of the shrimp landings<sup>37</sup>.

The sales organizations are obligated to register all landings provide detailed data for statistical purposes to the Directorate of Fisheries. The sales organizations also have to control landings against licenses and quotas and are given the opportunity to check logbooks. Controls are conducted by the sales organizations alone or in cooperation with the Directorate of Fisheries.

Landings can be sold directly to a buyer or kept in a neutral cold store waiting to be auctioned. In the last case a landing note, with all relevant data must be issued. The landing note very much looks like the contract note (Figure 8.6.4) which is issued upon every sale. It is normal for the larger off shore vessels holding shrimp trawling licenses to land the frozen, at- sea shrimp to neutral cold stores.

<sup>36</sup> Lov av 1951 no 3: <http://www.lovdata.no/all/hl-19511214-003.html>

<sup>37</sup> <http://www.rafisklaget.no/portal/page/portal/Rafisklaget/Engelsk>

# MSC FISHERY ASSESSMENT REPORT



## SLUTTSEDDEL

Salgsdato 17.12.2010

Oppgjør gjennom laget

## SALGSLAGETS EKSEMPLAR

Nr. 7 | 0 4016804

Side 1 av 1

<b>Kjøper</b>	Firmanavn	COLDWATER PRAWNS OF NORWAY AS	Org.nr.	992 097 450	Kjøpernr.	2253	
	Mottaksstedets godkj.nr.	T211	Mottaksstedets kommune	1902 - TROMSØ	Nasjon det landes i	NOR	
	Produksjonsanlegget		Prod.anleggets kommune				
<b>Ved landing til fartøy:</b>		Fartøys navn		Fartøy type	Kjøperfartøy Brønnbåt Transportskip		
	Reg.merke	Radiokallesignal	Flaggstat				
<b>Fisker</b>	Firmanavn	REMØY HAVFISKE AS	Org.nr.	831156872	Nasjonalitet	NOR	
	Adresse	POSTBOKS 244	Poststed	6099 FOSNAVÅG			
<b>Fiskefartøy</b>	Fiskefartøys navn	REMØY	Flaggstat	NOR			
	Registreringsmerke	M 0300HØ	Radiokallesignal	LLQE	Fartøys godkj.nr.	M670	
	Skippers navn	HENNING FLUSUND	Leiefartøy	=> Reg.merke kvotefartøy	Ant. ombord	13	
<b>Ved landing fra annet enn fiskefartøy:</b>		Fartøynavn		Fartøy type	Kjøperfartøy Brønnbåt Transportskip		
	Reg.merke	Org.nr.	Radiokallesignal	Flaggstat			
<b>Fangsten</b>	Fangstår	2010	Første fangstdato	16.11.2010	Siste fangstdato	13.12.2010	
	Fangst dagbokens nr. / turnr.	0 / 9	Fangstfelt	0 22 20 HINLOPENSTREDET	Fangstredskap	55 REKETRAL	
	Kvotetype	VANLIG KVOTE	Økon. sone	XSV	NØS sør for 62° N	Antall fiskedøgn	27
<b>Omsetning</b>	Dir. leveranse	<input checked="" type="checkbox"/>	Auksjon	<input checked="" type="checkbox"/>	Kontraktsalg	<input type="checkbox"/>	
	Kaisalg	<input type="checkbox"/>	Ikke tilsiktet fangst	<input type="checkbox"/>	Avgiftsfritt	<input type="checkbox"/>	
<b>Landingen</b>	Landingsdato / kl.slett	16.12.2010	00:00	Dellanding	Forr.anl.	T211	
					Neste anl.	T211	
	Produkt (art, str., tilst., kvalitet, anv.)	Anvendelse	Kons.	Lev.	Bruttovekt	Nettovekt	
	REKE U/220STK OMBF.RÅ A PILL/FRY	PILL/FRYS	9	4	147.175,0	15,520	
						2.284.156,00	

0

Referanse Seddelnr. 7 1 4364835 Forskudd Kr. 0,00 Ant.stk. Totalverdi Kr. 2.284.156,00

Fangsten er solgt i samsvar med sortering om bord i fartøyet, jfr. landingsvedlegg/utbud/salgsbekreftelse. I tilfeller der sortering avviker fra NRs vareregister, vil dette kunne medføre at gradering på sluttsett/avregning/faktura avviker fra landingsvedlegg/utbud/salgsbekreftelse.  
Undertegnede er kjent med at opplysningsplikten er gitt i medhold av lov, at opplysningene brukes til blant annet kvotekontroll og at det kan medføre straff eller administrative sanksjoner å gi uriktige eller mangelfulle opplysninger.

Underskrifter Dato 10.01.2011 Sted Norges Råfisklag Firmastempel

Kjøper

Fisker / den som lander

Utkjørt 10.01.2011 09:28

Figure 8.6.4: An example of a contract note (sluttsett) issued to a shrimp trawler (Remøy, LLQE) selling 147 tonnes of shrimp to a buyer (Coldwater Prawns of Norway AS) through a sales organisation (Norges Råfisklag).



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Almost all contract notes and landing notes are completed and submitted in electronic form. Landing data can be updated in close to real time and transmitted to the Directorate of Fisheries. The contract note and the landing note require 30 different types of information and the data is stored by the sales organizations and forwarded to the Directorate of Fisheries.

### 8.7 Summary of management system for the North East Arctic cold water prawn fishery

The management system for the North East Arctic cold water shrimp fishery consists of the following elements:

- Scientific advice from NIPAG (NAFO-ICES Pandslus Assessment Group) based on Russian (PINRO) and Norwegian (IMR) marine research institutions data and analyses (survey data, fisheries statistics and stock assessments).
- An implicit management objective based on access control (licences and fishing days), demands on gear parameters (mesh size and sorting grids) and extensive use of area closures when small shrimp (< 15mm CL) or small fish (red fish, Greenland halibut, cod and haddock) are present in catches above defined limits. However, it is the assessment team's recommendation that an explicit harvest control rule is established, since the Norwegian authorities have no intentions of establishing a TAC for this shrimp fishery.
- Norwegian legislation is based on international law and knowledge and experience of fisheries management built up over time. Secondary laws, and the consulting law making process involving all stakeholders, gives a dynamic set of regulations for all relevant issues in the shrimp fishery.
- An electronic on-line reporting system reports position on an hourly basis and logbook data on a daily basis to the Norwegian Fisheries Monitoring Centre" (FMC) at the Directorate of Fisheries.
- Two types of inspections at sea; the surveillance program in the Barents Sea and the Norwegian Coast Guards surveillance of the fishing fleet.
- Landing control with all catches conducted by the sales organizations where an extensive data set is sent to the Directorate of fisheries in close to real time.

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## MSC FISHERY ASSESSMENT REPORT

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## 9 BACKGROUND TO THE REPORT

### 9.1 Authors/Reviewers

The evaluation has been performed by the following:

*DNV team:*

**Sandhya Chaudhury** (Lead Auditor, DNV Certification AS): B.Sc., MBA. Sandhya has been the Lead auditor for various MSC Pre-assessment and Full assessments since 2005. She has participated in various MSC workshops, introducing certification methodology for MSC Fisheries and Chain of custody to workshop participants. Sandhya has auditor experience with other quality management standards for seafood since 2002 and industry experience since 1991.

**Anna Kiseleva:** (Project administrator, DNV Certification AS) Anna has a M.Sc. in International Fisheries Management from Tromsø University and a M.Sc. in Business Management from Russian State Academy of Fishery. She has eight years experience in Fisheries including management systems and seafood trade. Anna has extensive knowledge in fish quality standards and eco-labelling of seafood products. Anna has been a member of several assessment teams for MSC Fishery certifications since 2008.

*Independent specialists:*

**D.G. (Don) Parsons :** Don Parsons is a retired research scientist from Fisheries and Oceans Canada, Newfoundland Region. He has a M.Sc. in Biology from Memorial University of Newfoundland. Mr. Parsons was the Principle Scientific Investigator for the biology, ecology and population dynamics of northern and striped shrimp (*Pandalus borealis* and *P. montagui*) and fisheries research in the Newfoundland and Labrador Region from 1978 through to 2005. He has been a member of the International Commission for the Exploration of the Seas (ICES) *Pandalus* Working Group (and subsequent Study Group) as well as a scientific advisor for the Northern Shrimp Advisory Committee (NSAC) in eastern Canada. He has represented Canada at various other international fora on *Pandalus* species and has published extensively on the biology and population dynamics of northern shrimp.

**Edgar Henriksen M.Sc.:** Edgar Henriksen has a M.Sc in Fisheries and works as a scientist at Nofima Market the Norwegian Institute of Fisheries and Aquaculture Research, Tromsø. He has worked as a consultant in fisheries and regional development and has been the head of the planning section in the county commissioner's staff in Finnmark. Edgars present research activities and fields of interest are in bio economics, fisheries regulations, regional economics and the structure in fishing fleet. Edgar has published extensively on development of the Norwegian fishing fleet, responsible fisheries, regional quotas, etc.

### 9.2 Previous certification evaluations

Two pre-assessments have been conducted for the Norway North East Arctic cold water prawn fishery undergoing full-assessment. The first pre-assessment was conducted in 2004 by Moody Marine Ltd and the second in 2010 by Det Norske Veritas Certification AS.

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### 9.3 Harmonisation

There are several fisheries targeting *Pandalus borealis* species which are already MSC Fisheries certified or undergoing certification process (ref. table 9.3). Majority of them take place in the North West Atlantic and do not intersect with the Norwegian cold water prawn fishery which takes place in the North East Atlantic. The only other fishery engaged in MSC Fisheries assessment process and targeting *Pandalus Borealis* in the North East Atlantic is Skagerrak, Kattegat and Norwegian Deeps prawn fishery. This fishery has a different geographical location and does not overlap with the Norway North East Arctic cold water prawn fishery.

**Thus, there have been no harmonisation issues identified at this stage of the assessment process.**

Common name	Latin name	Fishery name	Certificate status	FAO region
Shrimp/Prawn	Pandalus borealis	Canada northern prawn	Certified	Area 21 Atlantic, Northwest
		Canada offshore northern and striped shrimp	In assessment	Area 21 Atlantic, Northwest
		Gulf of St. Lawrence northern shrimp	Certified	Area 21 Atlantic, Northwest
		Gulf of St Lawrence northern shrimp trawl fishery Esquiman Channel	Certified	Area 21 Atlantic, Northwest
		Scotian shelf shrimp	In assessment	Area 21 Atlantic, Northwest
		West Greenland coldwater prawn	In assessment	Area 21 Atlantic, Northwest
		Fogo Island cold water shrimp	In assessment	Area 21 Atlantic, Northwest
		Skagerrak, Kattegat and Norwegian Deeps prawn	In assessment	Area 27 Atlantic, Northeast

Table 9.3. List of fisheries targeting *Pandalus borealis* involved in MSC Fisheries certification process.

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### 9.4 Field Inspections

The following field visits were carried out:

Name	Affiliation	Date	Key Issues
Tor-Edgar Ripman	The Norwegian Fishermen's Sales Organisation	20 January 2010	Pre - Assessment
Anna Magnusson Sverre Johansen	Ministry of Fisheries and coastal Affairs, Norway	14 March 2011	<ul style="list-style-type: none"> <li>- Management system review;</li> <li>- Management system transparency;</li> <li>- Decision making process;</li> </ul>
Ove Johansen, Marketing Manager NSEC  Tor-Edgar Ripman, Marketing Manager, The Norwegian Fishermen's Sales Organisation  Olav Remøy, Ship owner  Jan Ivar Maråk, Director, Fish Boat owners association  Kristin Alnes, Advisor, Norwegian Seafood Federation (FHL)	Client representatives	14 March 2011	<ul style="list-style-type: none"> <li>- Fishing operations;</li> <li>- Status of the stock;</li> <li>- By-catch, habitats and ecosystem;</li> <li>- Fisheries management;</li> <li>- Management system;</li> <li>- System of tracing and tracking of fish.</li> </ul>
Peter Gullestad, Specialist Director  Modulf Overvik, Senior Advisor  Thorbjørn Thorvik, Senior Advisor	Norwegian Directorate of Fisheries	15 March 2011	<ul style="list-style-type: none"> <li>- Performance of the harvest strategy;</li> <li>- By-catch, discards and slipping;</li> <li>- Control, Enforcement and Surveillance;</li> <li>- Respect for laws;</li> <li>- Dispute mechanisms.</li> </ul>
Carsten Hvingel, Leader of research group "Benthic habitats and shellfish"  Pål Buhl-Mortensen, Senior Research Scientist , Research Group Benthic Habitats, MAREANO	Institute of Marine Research, Norway	15 March 2011 (tlf)	<ul style="list-style-type: none"> <li>- Status of the stock;</li> <li>- Harvest strategy;</li> <li>- Target and limit reference points;</li> <li>- Information and Monitoring;</li> <li>- Assessment methods;</li> <li>- Impact of fisheries on ecosystem.</li> </ul>

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### 9.5 Stakeholder consultations

Several stakeholders have been identified and contacted in connection with the assessment of the Norway North East Arctic cold water prawn fisheries. A full list of all stakeholders is given in enclosure 1.

Information was also made publicly available at the following stages of the assessment:

Date	Information	Media
01.12.2010	Notification of Full assessment	Direct E-mail/letter Notification on MSC website
01.12.2010	Notification of Assessment Team	Direct E-mail Notification on MSC website
19.01.2011	Confirmation of Assessment Team	Direct E-mail Notification on MSC website
19.01.2011	Announcement of default assessment tree	Direct E-mail Notification on MSC website
19.01.2011 & 25.01.2011	Notification of assessment visit and call for meeting requests	Direct E-mail Notification on MSC website
20.12.2010- 28.12.2010	Advertisement of certification + Invitation to contribute to assessment process	Advertisement on <a href="http://www.intrafish.com">www.intrafish.com</a>
22.12.2010	Advertisement of certification + Invitation to contribute to assessment process	Advertisement in Fiskaren
19.01.2011	Notification of Proposed Peer Reviewers	Direct E-mail Notification on MSC website
28.03.2011	Confirmation of Proposed Peer Reviewers	Direct E-mail Notification on MSC website
29.11.2011	Notification of Public Comment Draft Report	Direct E-mail Notification on MSC website
	Notification of Final Report	Direct E-mail Notification on MSC website

### 9.6 Assessment Criteria

The basis for the MSC-certification is the standard denoted as the “MSC Principles and Criteria for Sustainable Fisheries”, organised in three main principles. Principle 1 concentrates on the need to maintain the target stock at a sustainable level; Principle 2 draws attention to maintaining the ecosystem in which the target stock exists, and Principle 3 addresses the requirement for an effective fishery management system in order to fulfil Principles 1 and 2. In addition Principle 3 takes into account national and international regulations. The Principles 1-3, with pertaining criteria, are presented below:

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### PRINCIPLE NUMBER 1

**A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery<sup>38</sup>:**

*Intent:*

The intent of this principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favour of short term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.

*Criteria:*

1. The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.
2. Where the exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame.
3. Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.

### PRINCIPLE NUMBER 2

**Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.**

*Intent:*

The intent of this principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.

*Criteria:*

1. The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.
2. The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species.
3. Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields.

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<sup>38</sup> The sequence in which the Principles and Criteria appear does not represent a ranking of their significance, but is rather intended to provide a logical guide to certifiers when assessing a fishery. The criteria by which the MSC Principles will be implemented will be reviewed and revised as appropriate in light of relevant new information, technologies and additional consultations.

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## MSC FISHERY ASSESSMENT REPORT

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### PRINCIPLE NUMBER 3:

**The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.**

*Intent:*

The intent of this principle is to ensure that there is an institutional and operational framework for implementing Principles 1 and 2, appropriate to the size and scale of the fishery.

#### **Part A: Management System Criteria**

The fishery shall not be conducted under a controversial unilateral exemption to an international agreement.

The management system shall:

1. Demonstrate clear long-term objectives consistent with MSC Principles and Criteria and contain a consultative process that is transparent and involves all interested and affected parties so as to consider all relevant information, including local knowledge. The impact of fishery management decisions on all those who depend on the fishery for their livelihoods, including, but not confined to subsistence, artisanal, and fishing-dependent communities shall be addressed as part of this process.
2. Be appropriate to the cultural context, scale and intensity of the fishery – reflecting specific objectives, incorporating operational criteria, containing procedures for implementation and a process for monitoring and evaluating performance and acting on findings.
3. Observe the legal and customary rights and long term interests of people dependent on fishing for food and livelihood, in a manner consistent with ecological sustainability.
4. Incorporates an appropriate mechanism for the resolution of disputes arising within the system<sup>39</sup>.
5. Provide economic and social incentives that contribute to sustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing.
6. Act in a timely and adaptive fashion on the basis of the best available information using a precautionary approach particularly when dealing with scientific uncertainty.
7. Incorporate a research plan – appropriate to the scale and intensity of the fishery – that addresses the information needs of management and provides for the dissemination of research results to all interested parties in a timely fashion.
8. Require that assessments of the biological status of the resource and impacts of the fishery have been and are periodically conducted.
9. Specify measures and strategies that demonstrably control the degree of exploitation of the resource, including, but not limited to:
10. Setting catch levels that will maintain the target population and ecological community's high productivity relative to its potential productivity, and account for

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<sup>39</sup> Outstanding disputes of substantial magnitude involving a significant number of interests will normally disqualify a fishery from certification.

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## MSC FISHERY ASSESSMENT REPORT

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the non-target species (or size, age, sex) captured and landed in association with, or as a consequence of, fishing for target species.

- Identifying appropriate fishing methods that minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas.
  - Providing for the recovery and rebuilding of depleted fish populations to specified levels within specified time frames.
  - Mechanisms in place to limit or close fisheries when designated catch limits are reached.
  - Establishing no-take zones where appropriate.
11. Contains appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specifies corrective actions to be taken in the event that they are.

### Part B: Operational Criteria

Fishing operation shall:

12. Make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age, and/or sex of the target species); minimise mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive.
13. Implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas.
14. Not use destructive fishing practices such as fishing with poisons or explosives.
15. Minimise operational waste such as lost fishing gear, oil spills, on-board spoilage of catch, etc.
16. Be conducted in compliance with the fishery management system and all legal and administrative requirements.
17. Assist and co-operate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery.

The MSC Principles and Criteria presented above set the requirements for the fishery that undergoes certification. MSC's certification methodology is based on a structured hierarchy of *Sub-criteria* and *Performance indicators*. The overall performance is decided on the basis of the scoring criteria that the fishery gets during assessment. These sub-criteria and performance indicators have been developed by the MSC in the form of a default assessment tree.

When a fishery is evaluated the performance indicators (normally specific statements or questions) are checked out, and each performance indicator has three different "scoring guideposts" that can be defined. MSC characterises these scoring points as follows:

- Perfect practice, representing the level of performance that would be expected in a theoretically 'perfect' fishery (100 points).
- Exemplary or best practice (80 points).
- Minimum sustainable practice (60 points).

## MSC FISHERY ASSESSMENT REPORT

An overview of the assessment methodology is given in Marine Stewardship Council Fisheries Assessment Methodology and Guidance to Certification Bodies. This guidance illustrates how the MSC Principles and Criteria give a basis for sub-criteria and performance indicators defined by DNV, resulting in various scores for the fishery.

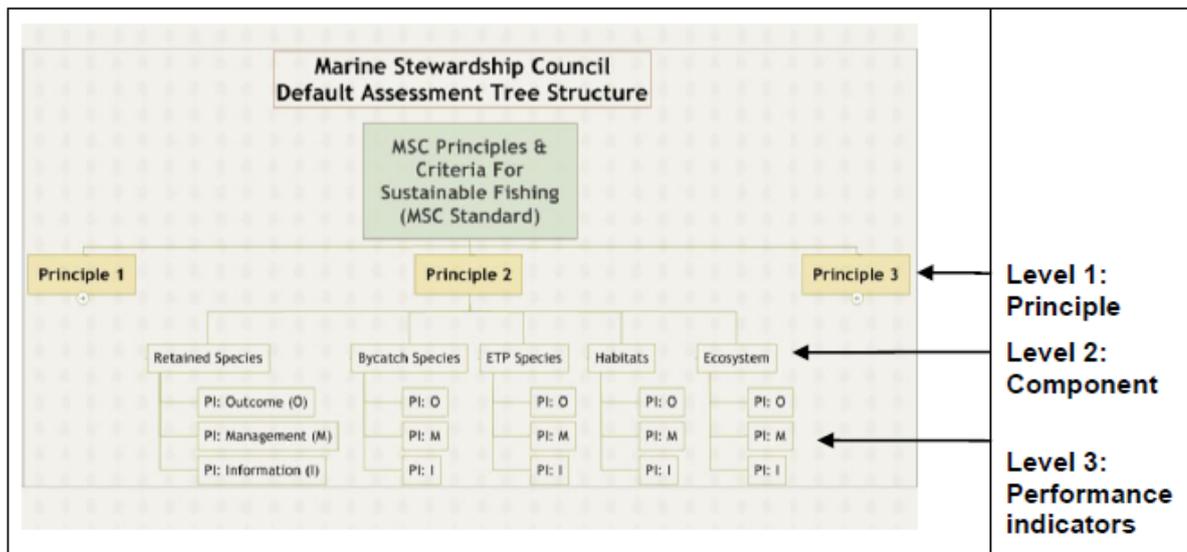


Figure 9.6: Assessment tree levels relevant to scoring fisheries.

### 9.7 Evaluation Techniques

Site visits to the fishery are performed by the certification body (here DNV) and the assessment team and consultations are done with interested stakeholders. The performance indicators and the pertaining scoring systems are evaluated, and it is judged if the fishery meets the requirements for MSC certification.

In order to fulfil the requirements for certification the following minimum scores are required:

- The fishery must obtain a score of 80 or more for each of the three MSC Principles, based on the weighted aggregate scores for all *Performance Indicators* under each *Criterion* in each *Principle*.
- The fishery must obtain a score of 60 or more for each *Performance Indicator* under each *Criterion* in each *Principle*.

Even though a fishery fulfils the criteria for certification, there may still be some important potential risks to future sustainability that are revealed during assessment. These are performance indicators that score less than 80, but more than 60. In order to be granted a MSC fishery certificate the client must agree to do some further improvements regarding these points. The certification body (here DNV) sets a timescale for the fishery to improve the relevant areas, so that the certification process can continue.

Default performance indicators and the scorings allocated in the evaluation are enclosed.

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## MSC FISHERY ASSESSMENT REPORT

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### 9.8 Limit of Identification of Landings from the Fishery

#### 9.8.1 Traceability

Norwegian shrimp fishery, as other Norwegian fisheries (e.g. Norwegian North East Arctic offshore cod and haddock fisheries), which are already MSC certified, are subject to the same extensive reporting requirements ensuring that all Norwegian catches of shrimp taken in ICES areas I and II are properly reported and recorded.

The information on shrimp catches taken by Norwegian offshore fleet is recorded electronically by means of electronic log-books. For coastal fleet, catch information is recorded manually by skippers and entered in the logbooks on a daily basis. It is expected that the electronic registration of catches would be extended to the coastal fleet in the next few years.

All vessels report to authorities before leaving the port and then before entry to the fishing area and start of the fishing activities. It is a requirement that all details on fishing activities are reported every 24 hours. When the fishing trip is finished it should also be reported. In addition to that, landing information should be reported to the respective sales organisations. Accurate reporting for offshore fleet is ensured through the VMS system, while smaller coastal fleet is subject to inspections by Coast Guard.

According to fishermen themselves, the reporting is a continuous process and it is strictly followed in order to ensure compliance with the regulations.

#### 9.8.2 At – sea processing

Shrimp catches taken by offshore fleet are packed and labelled on board the vessel.

Processing of shrimp on board involves following steps:

1. grading (automatic)
2. cooking
3. freezing
4. packing

Big size shrimp is packed in the cartons/wholesale boxes of 5 kg, which are destined to the supermarkets in Norway, Denmark, Russia and China.

Each carton is assigned a label which provides information on:

- Producer/ Vessel
- Country of origin
- Catch area
- Product
- Size
- Net weight
- Production date
- Shelf life

Small and medium size shrimp is frozen in blocks of 21-22 kg and are delivered to processing plants in Norway and Iceland.

## MSC FISHERY ASSESSMENT REPORT

Inshore shrimp catches are delivered chilled in plastic boxes and no labelling is applied on these products.



Figure 9.8.2: Labelling system on board of Norwegian offshore vessels targeting shrimp.

### 9.8.3 First point of landing

Majority of shrimp catches originating from Norway North East Arctic cold water prawn fishery are destined for processing/ peeling factories in Norway and Iceland. First point of landing is therefore mostly in Norway or Iceland. Exemption may apply when the shrimp have to be stored before catches are sold. In this case, shrimp would be landed at cold stores and a landing note instead of sales note would be issued.

Before storing, all shrimp cartons are put on the pallet, which is done directly on board the vessel. All boxes are labelled with vessel information as described above. The routines at cold stores are rather strict and the cold store does not release the catch before the approval from the sales organisation is received. There are around 6 -7 cold stores along the Norwegian coast which are used for storage of shrimp.

Inshore shrimp catches are landed fresh on ice or boiled on ice, while all offshore catches are landed boiled and frozen.

### 9.8.4 First Point of Sale

All catches from Norwegian cold water prawn fishery are sold through electronic auctions. There are totally 5 auctions which handle sales of Norwegian shrimp (See enclosure 4). Norges Råfisklag is the main auction house and has a central role in the sales process. Both Norwegian and foreign fishermen sell their fish through this marketplace which is open for bids from Norwegian and foreign buyers. At landing, shrimp is weighed and sales notes providing information on the type of species, size and weight are issued. Catch data are instantly reported to governmental bodies, providing high quality input for resource control purposes. Landings in Iceland are made through Surofi auction.

First points of sale for Norwegian vessels targeting shrimp along the Northern Norwegian coast and North to 62°N are peeling plants or G&K Seafood, which is an Icelandic buyer of Norwegian shrimp.

# MSC FISHERY ASSESSMENT REPORT

First points of sale for Norwegian vessels targeting shrimp along the Southern Norwegian coast are processing factories in Norway.

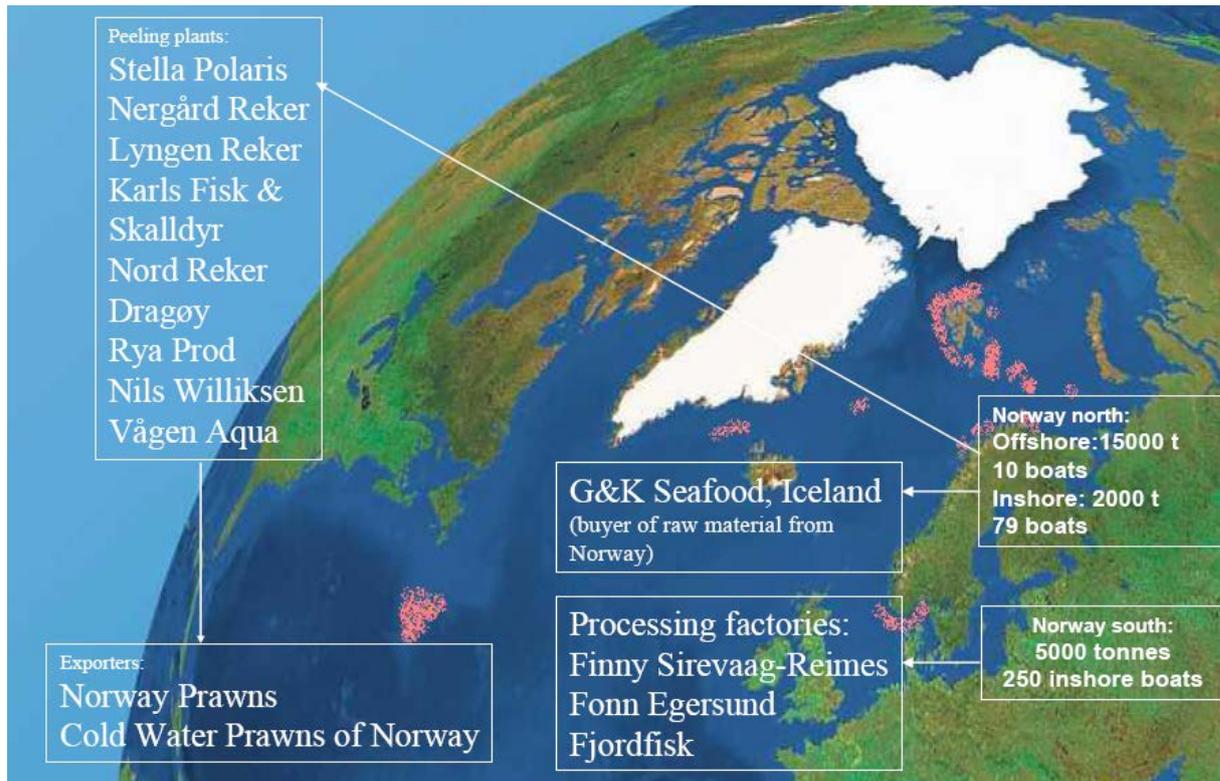


Figure 9.8.4a: First points of sale for Norwegian cold water shrimp<sup>40</sup>.

All shrimp catches are sold based on descriptions from vessel owners. Cooked and peeled shrimp is the main product form supplied to Norwegian market, while frozen peeled shrimp is the main form for Export.

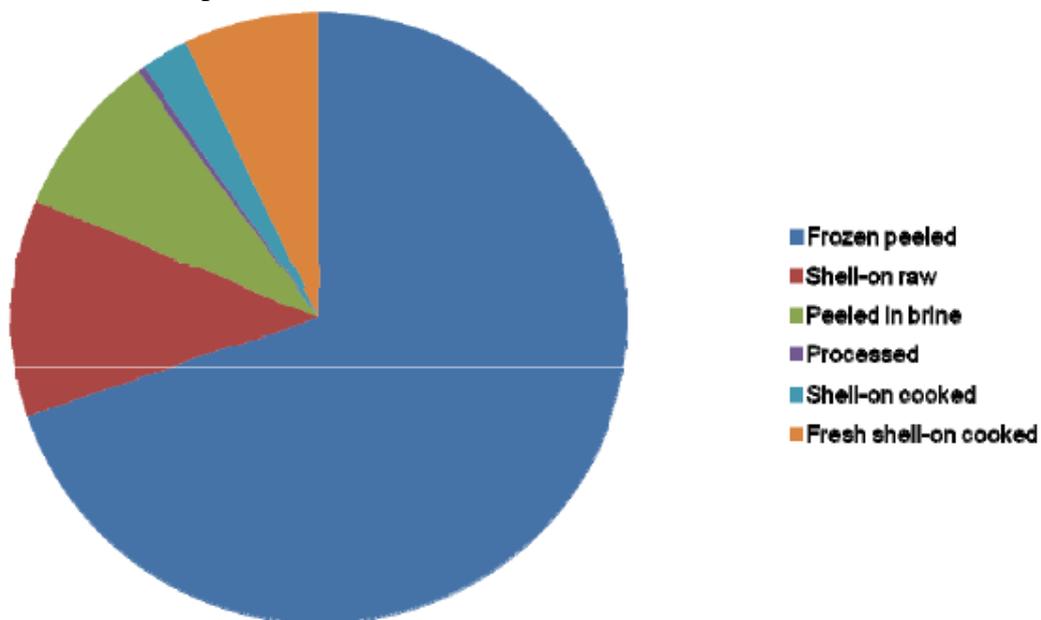


Figure 9.8.4b: Export of Norwegian shrimp by product category, 2010<sup>41</sup>.

<sup>40</sup> Norwegian Seafood Export Council.

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## MSC FISHERY ASSESSMENT REPORT

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### 9.8.5 Eligibility to enter Chain of Custody

Only Norwegian shrimp fisheries taking place in Barents Sea and Svalbard FPZ in ICES division I and II are eligible to enter Chain of Custody and carry the MSC logo.

Certification applies to entire Norwegian fleet fishing for shrimp within the defined unit of certification and will commence following the sale of fresh, chilled or frozen shrimp at the point of landing (auction, cold/freezer store or processing plant). Land-based peeling/processing plants as well as cold/freezer stores that perform anything more than movement of product must have separate CoC certification.

### 9.8.6 The target eligibility date

The target eligibility date is **29<sup>th</sup> May 2011**. Prawns caught after this date by the vessels selling through the 5 defined sales organizations (Encl. 4) and kept in the storage at certified premises will be eligible to enter the MSC Chain of Custody.

### 9.8.7 Evaluation results

Tables showing the relevant indicators and scoring guideposts for the assessment are found in enclosure 5. Observations, weighting applied and scores are presented together with references to the sources of information.

The performance of the Norway North East Arctic cold water prawn fisheries in relation to the MSC Principles 1, 2 and 3 is summarized as follows:

<b>MSC Principle:</b>	<b>Performance:</b>
<i>Principle 1: Sustainability and Exploited stock</i>	Score: 88.1 PASS
<i>Principle 2: Maintenance and Ecosystem</i>	Score: 90.0 PASS
<i>Principle 3: Effective Management System</i>	Score: 86.6 PASS

The fishery achieved a score of 80 or more for each of the three MSC Principles, and did not score under 60 for any of the set MSC Criteria. The assessment team has therefore reached the following determination:

**It is recommended that the Norway North East Arctic cold water prawn fisheries for the client group Norwegian Seafood Export Council is certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.**

## 9.9 Scope of certification

This assessment relates only to the fishery defined in Section 2.1 up to the point of landing as defined in Section 8.7.2. The list of vessels eligible for this certification will be updated on an annual basis and will be included in annual surveillance and recertification reports.

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<sup>41</sup> Source: Norwegian Export Council.



## MSC FISHERY ASSESSMENT REPORT

Monitoring and control of fishing locations and methods is considered sufficient to ensure fish and fish products invoiced as such by the fishery originate from within the evaluated fishery. Accordingly, the assessment team recommends a fishery certificate.

### 9.10 Conditions or recommendations associated with this certification

**Conditions:** The fishery attained a score of below 80 against 6 Scoring Indicators. The assessment team has therefore set 3 conditions for continuing certification that the client is required to address. The conditions are applicable to improve performance to at least the 80 level within a period set by DNV but no longer than the term of the certification.

The 3 conditions are associated with 6 key areas of performance of the fishery. Condition, associated timescale and relevant scoring indicators are as follows:

#### **Condition 1: Absence of Harvest Control Rule**

##### **PI CATEGORY 1.2.2**

**PI:** There are well defined and effective harvest control rules in place

**SG:** 80

##### **ASSESSMENT TEAM FINDINGS:**

Although management tools for the Norway North East Arctic cold water prawn fishery are well defined, and consistent with the harvest strategy, there is no formal harvest control rule for this fishery.

##### **PI CATEGORY 3.1.3**

**PI:** The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach.

**SG:** 80

##### **ASSESSMENT TEAM FINDINGS:**

There is no formal management policy; however there is ongoing work to establish a general management plan as well as a specific Harvest Control Rule for Norwegian shrimp fisheries in Barents Sea (ICES I and II).

##### **PI CATEGORY 3.2.1**

**PI:** The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.

**SG:** 80

##### **ASSESSMENT TEAM FINDINGS:**

There are no short or long-term explicit management objectives; however there is ongoing work to establish a general management plan as well as a specific Harvest Control Rule for Norwegian shrimp fisheries in Barents Sea (ICES I and II)

##### **ACTION:**

The client, Norwegian Seafood Export Council represents the whole Norwegian fleet targeting shrimp in the unit of certification. Thus, it is incumbent upon NSEC to take a proactive role in encouraging the industry to support authorities in their work to establish and implement an explicit harvest control rule for Norwegian shrimp fisheries in the Barents Sea (ICES I and II). It is expected that the Harvest control rule will be consistent with ICES advice and precautionary approach, as well as define a clear and explicit strategy on how to manage the stock, when the stock limits are approached.




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## MSC FISHERY ASSESSMENT REPORT

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### **TIMESCALE:**

Explicit management plan and Harvest Control Rule for Norwegian shrimp fisheries in Barents Sea (ICES I and II) should be implemented within the timeframe of this certificate. Active support for an appropriate management plan and Harvest control rule proposal should be demonstrated with an immediate effect.

### **Condition 2: Impact on sensitive habitats**

#### **PI CATEGORY 2.4.1**

**PI:** The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.

**SG:** 80

#### **ASSESSMENT TEAM FINDINGS:**

The current knowledge on the impacts of shrimp trawling on sensitive habitats is incomplete. Thus, it is not possible to say with a high degree of certainty that the fishery under assessment is highly unlikely to reduce structure and function of sensitive habitats in the Barents Sea to a point where there would be serious or irreversible harm.

There is an on-going project (MAREANO), coordinated by the Institute of Marine Research, the Geological Survey of Norway and the Norwegian Hydrographic Service, aimed to map distribution and structure of sensitive habitats in the Barents Sea and to assess potential impact of trawling on the habitats like coral and sponge habitats.

#### **ACTION:**

The NESC on behalf of Norwegian shrimp industry is expected to monitor results from the MAREANO project, and should the results indicate significant impacts of shrimp trawling on sensitive habitats, take an immediate action in order to reduce impact of trawling and eliminate the risk of impairing structure and function of sensitive habitats in the unit of certification.

#### **TIMESCALE:**

It is expected that quantitative information on distribution of sensitive habitats in the Barents Sea and the impacts of trawling on these habitats would be obtained through the MAREANO project within the timeframe of this certificate.

The client should present results from MAREANO project at every surveillance audit, and demonstrate, if required, that necessary actions are taken in order to protect sensitive habitats from destruction.

### **Condition 3: Discards of by-catch**

#### **PI CATEGORY 3.1.4**

**PI:** The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.

**SG:** 80

#### **ASSESSMENT TEAM FINDINGS:**

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## MSC FISHERY ASSESSMENT REPORT

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Under the Marine Resources Act, landing of all by-catch is mandatory. But since the responsibility & costs for disposal of all non-commercial by-catches are borne solely by the fishermen, this regulation risks being undermined in the case of large amounts of by-catch (eg. Polar cod by catch).

Directorate of Fisheries tend to agree with the fishermen on the fact that it is not always reasonable to bring big accidental catches of polar cod onshore and possibilities for amending the regulation is under consideration. However, the fact that the mandatory regulation does not seem to be adequately enforced and monitored by management raise some concern and pose a condition to certification.

### **PI CATEGORY 3.2.3**

**PI:** Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with.

**SG:** 80

### **ASSESSMENT TEAM FINDINGS:**

A monitoring, control and surveillance system has been implemented. In most instances the ability to enforce management measures, strategies and/or rules has been demonstrated. However, the fishery has demonstrated an inability to enforce the regulation that requires the mandatory landing of all by-catch.

### **ACTION:**

Until the regulation on obligatory landing of all by-catch is amended by Norwegian Directorate of fisheries, allowing fishermen to discard accidental catches of polar cod, the client must comply with existing regulation under Marine Resource Act and land all by-catches of polar cod as required.

### **TIMESCALE:**

By the first surveillance audit, client must present clear evidence that they comply with the regulation or that the regulation was amended allowing them to discard accidental by-catches of polar cod.

If discarding of by-catch of polar cod will be allowed, the client vessels are required to adopt a registration system which can provide clear statistical evidence on the scope of polar cod discards.



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## MSC FISHERY ASSESSMENT REPORT

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### 10 PEER REVIEW

Peer reviewers proposed and confirmed are:

Dr. David Bennett

Dr. Julian Addison:

The reports from the peer reviewers are given in enclosure 7.



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## MSC FISHERY ASSESSMENT REPORT

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### 11 STAKEHOLDER COMMENTS

The public comment draft report was posted on the MSC web pages<sup>42</sup> – and all stakeholders were encouraged to comment on the factual contents of the report during 30 days comment opportunity from 29<sup>th</sup> of November 2011 to 30<sup>th</sup> of December 2011.

The certification body, Det Norske Veritas AS, has received comments from Marine Stewardship Council and WWF during this 30 days comment period and gave careful consideration to all comments. Comments details and the response of the assessment team are presented in Enclosure 8.

All comments made by MSC and WWF are documented and forwarded by DNV to its certification decision-making entity.

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<sup>42</sup> [www.msc.org](http://www.msc.org)



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# MSC FISHERY ASSESSMENT REPORT

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## 12 OBJECTION PROCESS



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### 13 FORMAL CONCLUSION AGREEMENT

#### 13.1 Applicant's Agreement to meet Specified Conditions.

On behalf of the Norwegian Seafood Export Council, I accept this Preliminary Draft Report regarding the Norway North East Arctic cold water prawn fishery assessment against the MSC Fishery standard for sustainable fisheries and confirm that information on the fishing activities and scope of certification is up to date and correct.

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Signed Ingrid Ø. Stearns Position Adviser environmental issues Date 21.07.11, Tromsø

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## MSC FISHERY ASSESSMENT REPORT

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### INFORMATION SOURCES

Information used in the main assessment has been obtained from interviews and correspondence with stakeholders in the fisheries, notably:

- I1. Norwegian Seafood Export Council
- I2. The Norwegian Fishermen's Sales Organisation
- I3. Ministry of Fisheries
- I4. Directorate of Fisheries
- I5. Institute of Marine Research

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### ENCLOSURE 1: OVERVIEW OF IDENTIFIED STAKEHOLDERS AND THEIR MAIN INTERESTS IN THE NORWAY NORTH EAST ARCTIC COLD WATER PRAWN FISHERY

Stakeholders	Geographical Coverage	Activities	Homepage
Norwegian Seafood Export Council Tel: 00 47 77 60 33 33 Contact: Ingrid Dahl Skarstein Email: <a href="mailto:ingrid.skarstein@seafood.no">ingrid.skarstein@seafood.no</a>	Norway	Support sales efforts of Norwegian seafood exporters.	<a href="http://www.seafood.no">www.seafood.no</a>
Informasjonsutvalget for Reker Tel: 00 47 776 60 117 Contact: Tor-Edgar Ripman Email: <a href="mailto:tor-edgar.ripman@rafisklaget.no">tor-edgar.ripman@rafisklaget.no</a>	Norway	Support sales efforts of Norwegian shrimp exporters.	<a href="http://www.rafisklaget.no">www.rafisklaget.no</a>
Minister of Fisheries and Coastal Affairs (Norway) <a href="mailto:postmottak@fkf.dep.no">postmottak@fkf.dep.no</a>	Norway	Responsible for the fisheries and aquaculture industries, seafood safety and fish health and welfare, harbours and sea transport	<a href="http://www.regjeringen.no/en/dep/fkd.html">http://www.regjeringen.no/en/dep/fkd.html</a>
Fisheries Directorate <a href="mailto:postmottak@fiskeridir.no">postmottak@fiskeridir.no</a>	Norway	Responsible for enforcement of laws and regulations	<a href="http://www.fiskeridir.no">www.fiskeridir.no</a>
Havforsknings Institutt <a href="mailto:post@imr.no">post@imr.no</a>	Norway	Centre for marine research	<a href="http://www.imr.no">www.imr.no</a>
Kystvakten- Coast guard <a href="mailto:ynekrestiansen@mil.no">ynekrestiansen@mil.no</a>	Norway	Enforcement of laws and regulations along the Norwegian coast.	<a href="http://www.mil.no/sjo/start/kystvakten/">http://www.mil.no/sjo/start/kystvakten/</a>

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## MSC FISHERY ASSESSMENT REPORT

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Norwegian Fishing Vessels owners Association (Fiskebåtredernes Forbund) <a href="mailto:tor-are@fiskebat.no">tor-are@fiskebat.no</a>	Norway	Employers and interest organization for deep sea fishing activities	<a href="http://www.fiskebat.no">www.fiskebat.no</a>
Bergen University <a href="mailto:arne.johannessen@bio.uib.no">arne.johannessen@bio.uib.no</a>	Norway	Marine Research	<a href="http://www.uib.no">www.uib.no</a>
Ålesund University <a href="mailto:postmottak@hials.no">postmottak@hials.no</a>	Norway	Marine Research	<a href="http://www.hials.no">www.hials.no</a>
Bellona <a href="mailto:marius@bellona.no">marius@bellona.no</a>	Norway	Science-based environmental organization	<a href="http://www.bellona.no">www.bellona.no</a>
Bodø University <a href="mailto:postmottak@hibo.no">postmottak@hibo.no</a>	Norway	Marine Research	<a href="http://www.hibo.no">www.hibo.no</a>
FoE/SOC for Conservation of nature <a href="mailto:naturvern@naturvern.no">naturvern@naturvern.no</a>	Norway	Protection of nature and environment.	<a href="http://www.naturvernforbundet.no">www.naturvernforbundet.no</a>
Food and Allied Workers Union <a href="mailto:firmapost@nnn.no">firmapost@nnn.no</a>	Norway	The Norwegian Union of Food, Beverage and Allied Workers (NNN) is a trade union in Norway.	<a href="http://www.nnn.no">www.nnn.no</a>
Greenpeace, Norway <a href="mailto:info@nordic.greenpeace.org">info@nordic.greenpeace.org</a>	Norway	Campaigning organisation that uses non-violent, creative confrontation to expose global environmental problems, and force solutions for a green and peaceful future.	<a href="http://www.greenpeace.no">www.greenpeace.no</a>
Ministry of Environment <a href="mailto:postmottak@md.dep.no">postmottak@md.dep.no</a>	Norway	Responsibility for carrying out the environmental policies of the Government.	<a href="http://www.regjeringen.no">www.regjeringen.no</a>
Institute of Fisheries Research <a href="mailto:post@fiskeriforskning.no">post@fiskeriforskning.no</a>	Norway	Provide advice to Norwegian authorities on aquaculture and the ecosystems in the Barents sea, Norwegian sea, North sea and Coastal zone.	<a href="http://www.imr.no">www.imr.no</a>
Natur og Ungdom	Norway	Environmental organization for the youth	<a href="http://www.nu.no">www.nu.no</a>

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<a href="mailto:info@nu.no">info@nu.no</a>			
Norwegian Coastal Fishermens Association <a href="mailto:post@norgeskystfiskarlag.no">post@norgeskystfiskarlag.no</a>	Norway	Safeguards fishermen's incomes and contribute to a sustainable and profitable growth in the Norwegian fishing industry	<a href="http://www.rafiskelaget.no">www.rafiskelaget.no</a>
Norwegian Fishermens Association <a href="mailto:fiskarlaget@fiskarlaget.no">fiskarlaget@fiskarlaget.no</a>	Norway	Tariff organization of fishermen and boat owners.	<a href="http://www.fiskarlaget.no">www.fiskarlaget.no</a>
World Wide Fund for Nature <a href="mailto:wwf@wwf.no">wwf@wwf.no</a>	Worldwide	Promote sustainability of fisheries.	<a href="http://www.panda.org">www.panda.org</a>
European Commission Fisheries	European Union	The European Commission's Directorate-General for Maritime Affairs and Fisheries manages the two policy areas of integrated maritime policy & common fisheries policy (CFP).	<a href="http://ec.europa.eu/fisheries/">http://ec.europa.eu/fisheries/</a>
ICES <a href="mailto:info@ices.dk">info@ices.dk</a>	North Atlantic	-Sustainable use of living marine resources and protection of marine environment.	<a href="http://www.ices.dk">www.ices.dk</a>
NSRAC <a href="mailto:ann.bell@aberdeenshire.gov.uk">ann.bell@aberdeenshire.gov.uk</a>	North Sea (EU)	-To work towards integrated and sustainable management of fisheries in the wide context of the marine environment.	<a href="http://www.nsrac.org">www.nsrac.org</a>
Fiskeri- og havbruksnæringens landsforening (FHL), Norwegian Seafood Federation <a href="mailto:firmapost@fhl.no">firmapost@fhl.no</a>	Norway	Represents interests of approximately 500 member companies and 8,000 employees. FHL covers the entire value chain from fjord to dinner table in the fisheries and aquaculture sectors in Norway.	<a href="http://www.fhl.no">www.fhl.no</a>
Norske sjømatbedrifters landsforening (NSL), Norwegian Seafood Association <a href="mailto:post@nsl.no">post@nsl.no</a>	Norway	The aim of the association is to attract the fishing, aquaculture and seafood processing industry of Norway in order to promote their common interests.	<a href="http://www.nsl.no">www.nsl.no</a>



## MSC FISHERY ASSESSMENT REPORT

### ENCLOSURE 2: LIST OF LICENSED NORWEGIAN SHRIMP TRAWLERS (OVER 65 FOOT) PER 2011-03-15\*\*

Registration N	Vessel name	Status	Vessel length
M 0025VD	GRANIT IV	ACTIVE	67,40
N 0230A	ANDØYBUEN	ACTIVE	62,90
F 0214M	LEIF ROALD	ACTIVE	24,00
T 0009T	TROMSBAS	ACTIVE	68,10
N 0054MS	STIAN ANDREAS	ACTIVE	25,07
F 0117VS	BÅTSFJORD	ACTIVE	50,20
SF0046V	GAMBLER	ACTIVE	69,65
M 0084G	GLOMFJORD	ACTIVE	33,80
T 0002I	STORNES	ACTIVE	47,70
N 0008VV	SKOLPEN	ACTIVE	25,65
N 0080A	ANDENESFISK I	ACTIVE	54,20
N 0200Ø	PRESTFJORD	ACTIVE	56,90
SF0127V	VALDERØY	ACTIVE	33,99
M 0133G	BRATTEGG	ACTIVE	56,90
N 0025VV	SKOLMEN	ACTIVE	27,42
SF0036A	ATLØYBUEN	ACTIVE	27,33
T 0251T	TJELDØY	ACTIVE	27,43
N 0035H	HEKKTIND	ACTIVE	47,60
M 0360HØ	OLYMPIC PRAWN	ACTIVE	60,00
M 0360HØ	OLYMPIC PRAWN	ACTIVE	60,00
N 0002H	SPITSBERGEN	ACTIVE	38,45
N 0210ME	MELØYFJELL	ACTIVE	27,41
N 0007VV	K.ARCTANDER	ACTIVE	53,10
N 0014VV	RØSTNESVÅG	ACTIVE	46,53
T 0070TK	BJØRN HARRY	ACTIVE	28,18
T 0008H	ARVID NERGÅRD	ACTIVE	40,02
M 0019K	OMSUND	ACTIVE	27,40
T 0150BG	COMET	ACTIVE	40,00
N 0015Ø	LANGØY	ACTIVE	40,00
T 0037H	KÅGTIND	ACTIVE	50,75
T 0039T	NORD KVALØY	ACTIVE	24,32
N 0004TN	TRÆNABANKEN	ACTIVE	33,51
T 0320T	ÅRVIKSAND	ACTIVE	21,07
N 0045A	LYSNES	ACTIVE	27,13
T 0005H	OLE-ARVID NERGÅRD	ACTIVE	54,60
R 0080ES	ROALDSEN	ACTIVE	58,92
T 0001H	J.BERGVOLL	ACTIVE	57,30
T 0006LK	OLE-KRISTIAN NERGÅRD	ACTIVE	37,00
T 0002H	TØNSNES	ACTIVE	50,80



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T 0008S	ARNØYTIND	ACTIVE	38,38
F 0001L	HERMES	ACTIVE	55,00
H 0074AV	TALBOR	ACTIVE	64,00
T 0656T	LONGYEAR	ACTIVE	46,05
M 0300HØ	REMØY	ACTIVE	63,62
M 0306HØ	REMØY	ACTIVE	63,62
M 0002HØ	HOPEN	ACTIVE	66,40
M 0030G	NORDSTAR	ACTIVE	75,50
M 0033VN	REMØY VIKING	ACTIVE	61,00
F 0147BD	KONGSFJORD	ACTIVE	53,20
T 0023T	SKAGØYSUND	ACTIVE	27,40
M 0157A	ARCTIC SWAN	ACTIVE	64,00
F 0157A	ARCTIC SWAN	ACTIVE	64,00
F 0225M	INGRID MAJALA	ACTIVE	49,90
F 0111BD	ATLANTIC STAR	ACTIVE	60,40
M 0359HØ	NORDØYTRÅL	ACTIVE	56,80
M 0093G	ATLANTIC VIKING	ACTIVE	55,20
T 0050LK	SEGLA	ACTIVE	27,38
F 0174M	SKAIDI	ACTIVE	44,95
T 0051LK	LISE-BEATE	ACTIVE	27,38
N 0100Ø	SUNDERØY	ACTIVE	56,20
M 0001A	VOLSTAD	ACTIVE	66,28
M 0002VD	RAMOEN	ACTIVE	66,70
N 0110L	SLETT HOLMEN	ACTIVE	33,99
M 0025G	LANGENES	ACTIVE	56,00
M 0007HØ	POLARIS	ACTIVE	60,00
N 0030H	VESTTIND	ACTIVE	60,00
N 0020MS	BERNT OSKAR	ACTIVE	36,50
T 0115T	TROMSØY	ACTIVE	34,00
M 0250A	LANGVIN	ACTIVE	58,84
T 0006T	KVITUNGEN	ACTIVE	43,59
M 0037G	ROALDNES	PASSIVE	33,95
M 0060G	NORDNES	PASSIVE*	26,52
	SENJAFJELL	PASSIVE*	18,35
NT0050NR	ARNØYFJORD	PASSIVE*	22,05
F 0071V	LAKSEFJORD	PASSIVE*	27,85
H 0271F	SOTRABAS	PASSIVE*	27,43

\*Passive i.e. vessels, which as per 2011-03-15 have no license/right to target shrimp, however such a right could be obtained within the year.

\*\*According to Norwegian Directorate of Fisheries, there are currently (per 15.7.2011) 58 licensed Norwegian shrimp trawlers (over 65 foot). Half of these trawlers do not fulfill requirement for active participation in shrimp fisheries. Thus, there are around 30 licenced trawlers targeting shrimp in the unit of certification.



## MSC FISHERY ASSESSMENT REPORT

### ENCLOSURE 3: LIST OF UNLICENSED NORWEGIAN COASTAL VESSELS (UNDER 65 FOOT) TARGETED SHRIMP IN 2010.

Registration N	Vessel name	Vessel length
T 0004S	ARIAN	19,60
T 0350T	ALF SENIOR	19,02
M 0034K	OMSUND 1	19,01
T 0087L	SVEBÅEN	18,88
N 0261V	TROGANGEN	18,65
T 0101L	GINA MARIE	17,08
T 0101L	STIAN ANDRE	17,08
T 0044B	STAR	16,58
ST0021B	STEINMAR	16,00
M 0062AV	ASLEGUT	15,88
F 0155A	PIA MARIE	15,85
H 0033O	KABA	15,82
M 0290AE	KONGSHOLM	15,70
T 0046L	SARA KARIN	15,66
N 0071B	HAVGRIM SENIOR	15,54
T 0319T	DANIEL-ANDRE	15,48
M 0040M	METHO	14,99
N 0110ME	JOHN-IVAR	14,99
T 0034S	TINDBØEN	14,99
N 0004BR	LYNGVÆR	14,98
N 0043BR	LYNGVÆR	14,98
T 0117LK	VIKABUEN	14,98
T 0198S	VIKSKJÆR	14,95
N 0155G	HAVØRNA	14,88
N 0030B	SVANA	14,86
T 0280LK	DALGÅRD	14,86
NT0035N	OTTERØYBUEN	14,65
N 0034L	HILDE	14,60
N 0007AH	BOYSEN	14,33
N 0018ME	TURBO	14,33
T 0030LK	JAKOB LIAN	14,29
N 0010R	ANITA	14,24
T 0005L	ØRAFISK	14,23
T 0030L	TEKATO	14,19
M 0020AE	RØNVIKBUEN	14,11
T 0176B	LARS-ANDREAS	14,11
F 0300M	GULLHOLMEN	14,09
T 0017T	BARSUND	14,09
N 0018B	NORDSTJERNEN	14,08
T 0120S	FRØYDIS MARIE	14,05
T 0012KN	ODD JONNY II	13,75
N 0188ME	MELØYBAS	13,68



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T 0026S	KAMØ	13,53
N 0004LF	LYKKEN	13,37
T 0086I	ENGENESVÆRING	13,05
F 0007A	ASTRID	12,98
N 0004N	UTHEIM	12,97
N 0021RT	KAIA CICILIE	12,95
N 0016H	JUNGMANN	12,92
T 0119L	TROND HARALD	12,86
T 0046T	TOR WERNER	12,80
T 0048L	FALKEN	12,80
T 0002SL	BRATTØY	12,40
N 0012BR	BØLGEN	12,34
T 0169L	ERNST MAGNE	12,20
N 0001NA	LINDA	12,17
N 0098ME	LUNA	12,13
M 0030HS	LANGHOLM	12,10
T 0028KN	OTTARSON	12,10
T 0678T	ROSA JADE	11,85
M 0071K	MARHOLM	11,63
NT0060V	BELL ROCK	11,11
T 0012T	LAKSTIND	10,67
M 0002ST	HARALD JR.	10,66
M 0004AE	UTRYGG	10,65
N 0025G	HAVBRYN	10,65
ST0056Ø	RAGNA ELIN	10,64
T 0142T	ARNT IVAR	10,63
T 0020S	TIGERGUTT	10,60
N 0060L	HAFBJØRG	10,55
M 0024G	JARO	10,53
NT0017V	HYDRA	10,47
M 0002G	SKAREGG	10,40
T 0070L	CHALLENGE	9,98
VA0005LD	RADIANCE	9,98
M 0016G	MONTY	9,91
M 0031G	REAL 1	9,87
M 0022G	BRIO	9,10
M 0061G	TEA	9,00
M 0160G	SKARODD	9,00
M 0010G	GOVIK	8,90

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### ENCLOSURE 4: LIST OF HARVESTERS SALES ORGANIZATIONS IN SHELLFISH SECTOR

No	Name	Address
1	The Norwegian Fishermen's Sales Organization	Norges Råfisklag Stortorget 2 9008 Tromsø Tlf: 77 66 01 00 <a href="http://www.rafisklaget.no">www.rafisklaget.no</a>
2	SUROFI	Sunnmøre og Romsdal Fiskesalgs Nedre Strandgate 4 6004 Ålesund Tlf: 70 10 24 00 <a href="http://www.surofi.no">www.surofi.no</a>
3	Vest-Norges Fiskesalgslag	Sjøgata 6700 Måløy Tlf: 57 85 59 50 <a href="http://www.vnf.no">www.vnf.no</a>
4	Rogaland Fiskesalgslag SL	Verven 42 4014 Stavanger Tlf: 993 77 755
5	Skagerakfisk S/L	Lagmannsholmen 1 4610 Kristiansand S Tlf: 38 12 42 00

## MSC FISHERY ASSESSMENT REPORT

### ENCLOSURE 5: CLIENT COMMENTS

#### Client comments received 2011-06-30

Norwegian Fishing Vessels owners Association/ Tor Are Vaskinn (secretary for shrimp group) has commented as follows:

Client comments:	DNV/assessment team comments
<p>NOR: Webjørn Barstad er satt opp som forbundets representant, men han er sluttet. Det er <a href="mailto:tor-are@fiskebat.no">tor-are@fiskebat.no</a> som gjelder.</p> <p>ENG: Webjørn Barstad is mentioned as association's representative. He has resigned and the new representative is Tor Are Vaskinn (<a href="mailto:tor-are@fiskebat.no">tor-are@fiskebat.no</a>).</p>	<p>Enclosure 1 is amended. Tor Are Vaskinn is the new representative for Norwegian Fishing Vessels owners Association.</p>
<p>NOR: Til vedlegg om havfiskefartøy. Telte 70 lisenser i vedlegget, men av disse er en rekke utgått på grunn av manglende aktivitet og eierskifte. I følge direktoratets liste er det 58 rettigheter igjen og av disse oppfyller neppe mer enn halvparten aktivitetskravet (skal ha deltatt i rekefisket i inneværende eller 2 forgående år). Ved eierskifte vil flere lisenser bortfalle.</p> <p>ENG: Regarding Enclosure 2 – licensed Norwegian trawlers. Counted 70 licenses in enclosure, but among those there are some which have expired due to lack of activity and/or change of ownership. According to records from Norwegian Directorate on fisheries there are 58 licenses, half of which do not fulfill activity requirements (shall participate in shrimp fishery during current year or during past 2 years).</p>	<p>Footnote added to Enclosure 2.</p>
<p>NOR: Til vedlegg 9. Rekrutteringen er i stor grad avhengig av beitepress fra torskefisk og kan vanskelig styres ved å regulere fisket. Minstemål for reker er på plass og felt stenges. Biomassen er stor, men igjen avhengig av beitepress.</p>	<p>Fishery has scored 100 under PI 1.1.1 Stock status and 80 under PI 1.1.2. Reference points.</p> <p>The assessment team considers the score of 80 (and not higher) for PI 1.1.2 as appropriate due to the fact that there is no target reference point for shrimp fishery in the unit of certification.</p>

## MSC FISHERY ASSESSMENT REPORT

<p>ENG: Regarding Enclosure 9. Recruitment is greatly dependent on pressure from cod stock and is difficult to manage by regulating the fishery. Minimum sizes for shrimp and closure areas are established. Level of biomass is big, but when again dependent on pressure from cod.</p>	<p>Score of 80 (and not lower) is justified by the fact that the shrimp stock is estimated to be close to its carrying capacity and in this instance the ecological role of shrimp as prey for other species is not a concern.</p>
<p>NOR: I dagens situasjon er det uproblematisk å innføre en eller annen form for regulering dersom det er grunn til å tro at TAC kan nås. Stor sannsynlighet for ulønnsomt fiske før en nærmer seg TAC. Den enkleste varianten er å stoppe fisket når TAC er beregnet oppfisket.</p> <p>ENG: In today's situation it's unproblematic to establish one or another form of regulation, should it be reason to believe that TAC could be reached. There is a big probability for unprofitable fishing before TAC is approached. The easiest solution is to stop fishery when TAC is estimated to be exhausted.</p>	<p>It is required by the MSC standard that the management policy should have clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach.</p> <p>Although management tools are well defined, and consistent with the harvest strategy, there is no formal harvest control rule for this fishery.</p> <p>It is expected that NSEC takes a proactive role and encourage industry to support authorities in their work to establish and implement a formal harvest control rule for Norwegian shrimp fisheries in Barents Sea (ICES I and II).</p>
<p>NOR: Bifangst av polartorsk kan være problematisk til tider og arten står på listen over fiskeslag som skal ilandbringes. Forbundet har spilt inn at denne arten må tas ut av listen over fiskeslag som skal tas på land.</p> <p>Ellers så har som kjent rekefiskerne tillatelse til å kaste ut bifangst når dette i vekt utgjør mindre enn 5% av fangsten.</p> <p>ENG: By-catch of polar cod could at times be a problem. Polar cod is part of the list of fish species which should be landed. Association has suggested to the authorities that these species should be taken from the list of species which should be brought onshore.</p> <p>Shrimp trawlers have permission to discard by-catch of polar cod, when by-catch in weight constitutes less than 5% of catch.</p>	<p>It is noted that the new regulation on by-catch of polar cod has been implemented by Norwegian authorities. Regulation is set in J-64-2011 and allows shrimp trawlers to discard by-catch of polar cod, when by-catch does not exceed 5% of the total catch taken in one haul.</p> <p>In case of successful certification, compliance with this regulation would be followed up at the next surveillance audit.</p>

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<p>NOR: Ut fra det forbundet kjenner til er det kun snabeluer som er i bifangst omtalt som rødfisk. Vi fikk artsbestemt en kartong med rødfisk fra rekefisket på Hopendjupet for noen år siden, av HI i Tromsø og der var det kun snabeluer. Denne bestanden omtales i litt mer positive ordelag enn vanlig uer (marinus).</p> <p>ENG: Based on knowledge of association, the only by-catch species of redfish occurring in the unit of certification is deep-water redfish (<i>Sebastes Mantella</i>). Some years ago, we received a generic cardboard box from Research Institute of Tromsø with red fish from shrimp trawler operated in Hopen area and there it was only <i>Sebastes Mantella</i>. This stock is mentioned in a bit more positive way than <i>Sebastes Marinus</i>.</p>	<p>The comment is added to scoring comment table under PI 2.3.1: ETP species/ Outcome status, specifying that the only by-catch species of redfish occurring in the unit of certification is deep-water redfish (<i>Sebastes Mantella</i>).</p>
<p>NOR: Det ikke er referanse til FAO rapport 472 fra 2005 og jeg kan tenke meg at vår handlingsplan blir at denne fremlegges som dokumentasjon vedr havbunnspåvirkning ved rekefiske, evt. med kommentarer/evaluering fra IMR. Denne rapporten er brukt ved sertifisering etter KRAV- og FOS-standard av rekefisket og burde vel også være relevant i MSC-sammenheng.</p> <p>ENG: There is no refernce to FAO report 472 from 2005 and we are tend to think that our action plan would be that this report is submitted as documentation regarding sea bottom impact during shrimp trawling, eventually with comments/evaluation from IMR. This report was used under shrimp certification according to KRAV- and FOS standard and should also be relevant for MSC certification.</p>	<p>FAO report 472, 2005 added to reference list. FAO report 472 states that: “Several studies have addressed the impacts of shrimp trawling on clayey-slit bottoms. No clear and consistent effects attributable to trawling were detected. However, potential disturbance effects may be masked by the more pronounced temporal variability demonstrated in these studies”.</p> <p>Condition applied to certification refers not to general impact of shrimp fishery on the sea bed, but to impact on vulnerable and sensitive habitats. Especially habitats dominated by corals, sponges, bivalves and other sessile organisms.</p> <p>FAO report 472 from 2005 concludes that” Habitats dominated by large sessile fauna may be severely affected by trawling”. And that “knowledge of the impacts of towed fishing gear is still rather rudimentary”.</p> <p>Thus, it is the view of the assessment team that Condition 2 shall be retained in order to sufficiently address the issue of impact of the trawl gear on sensitive habitats in the unit of certification.</p>



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### ENCLOSURE 6: CLIENT ACTION PLAN

#### *Action Plan for Meeting the Conditions for Certification of the Norwegian North East Arctic Cold Water Prawns Fisheries*

The Norwegian Seafood Export Council, on behalf of the Norwegian Seafood Industry (NSI), submits this Action Plan for meeting the Conditions for Certification of the Norwegian North East Arctic Cold Water Prawns Fisheries. NSI agrees to make a good faith effort to meet the intent of the Conditions set forth in the certifier's June 2011 preliminary Draft Report determining that the NSI North East Arctic Cold Water Prawns fisheries are sustainably managed under the MSC Principles and Criteria for Sustainable Fisheries.

NSI has set up a permanent formal advisory committee within, and reporting to, the Board of the Norwegian Seafood Export Council. To assist and complement the client (Seafood Export Council) in the certification procedure and to structure the follow-up of actions required, a working group is formed on the basis of the formal advisory committee. The advisory committee and the associated working group will monitor and follow up the actions required to meet the Conditions for Certification of the Norwegian North East Arctic Cold Water Prawns Fisheries.

#### **Condition 1: Absence of Harvest Control Rule**

##### **PI CATEGORY 1.2.2**

**PI:** There are well defined and effective harvest control rules in place

**SG:** 80

##### **ASSESSMENT TEAM FINDINGS:**

Although management tools for the Norway North East Arctic cold water prawn fishery are well defined, and consistent with the harvest strategy, there is no formal harvest control rule for this fishery.

##### **PI CATEGORY 3.1.3**

**PI:** The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach.

**SG:** 80

##### **ASSESSMENT TEAM FINDINGS:**

There is no formal management policy; however there is ongoing work to establish a general management plan as well as a specific Harvest Control Rule for Norwegian shrimp fisheries in Barents Sea (ICES I and II).

##### **PI CATEGORY 3.2.1**

**PI:** The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.

**SG:** 80



## MSC FISHERY ASSESSMENT REPORT

### **ASSESSMENT TEAM FINDINGS:**

There are no short or long-term explicit management objectives; however there is ongoing work to establish a general management plan as well as a specific Harvest Control Rule for Norwegian shrimp fisheries in Barents Sea (ICES I and II)

### **ACTION:**

The client, Norwegian Seafood Export Council represents the whole Norwegian fleet targeting shrimp in the unit of certification. Thus, it is incumbent upon NSEC to take a proactive role in encouraging the industry to support authorities in their work to establish and implement an explicit harvest control rule for Norwegian shrimp fisheries in the Barents Sea (ICES I and II). It is expected that the Harvest control rule will be consistent with ICES advice and precautionary approach, as well as define a clear and explicit strategy on how to manage the stock, when the stock limits are approached.

### **TIMESCALE:**

Explicit management plan and Harvest Control Rule for Norwegian shrimp fisheries in Barents Sea (ICES I and II) should be implemented within the timeframe of this certificate. Active support for an appropriate management plan and Harvest control rule proposal should be demonstrated with an immediate effect.

### **Condition 1 - NSI comments and action plan:**

Several types of harvest control rules might be suitable for the Norwegian CWP-fisheries in the Barents Sea, all fulfilling the same goal of protecting the stock from over exploitation and falling below target limits. Currently there is a harvest control rule based on fishing effort restrictions in place in parts of the Barents Sea which is linked up in international treaties and the timeframe for implementing a harvest control rule for the whole area could easily exceed the certificate.

### **Action 1**

The client, Norwegian Seafood Export Council represents the whole Norwegian fleet targeting shrimp in the unit of certification. NSEC will take a proactive role and encourage industry to support authorities in their work to establish and implement a formal harvest control rule for Norwegian Cold Water Prawns fisheries in Barents Sea (ICES I and II).

### **Condition 2: Impact on sensitive habitats**

#### **PI CATEGORY 2.4.1**

**PI:** The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.

**SG:** 80

### **ASSESSMENT TEAM FINDINGS:**



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The current knowledge on the impacts of shrimp trawling on sensitive habitats is incomplete. Thus, it is not possible to say with a high degree of certainty that the fishery under assessment is highly unlikely to reduce structure and function of sensitive habitats in the Barents Sea to a point where there would be serious or irreversible harm.

There is an on-going project (MAREANO), coordinated by the Institute of Marine Research, the Geological Survey of Norway and the Norwegian Hydrographic Service, aimed to map distribution and structure of sensitive habitats in the Barents Sea and to assess potential impact of trawling on the habitats like coral and sponge habitats.

### **ACTION:**

The NESC on behalf of Norwegian shrimp industry is expected to monitor results from the MAREANO project, and should the results indicate significant impacts of shrimp trawling on sensitive habitats, take an immediate action in order to reduce impact of trawling and eliminate the risk of impairing structure and function of sensitive habitats in the unit of certification.

### **TIMESCALE:**

It is expected that quantitative information on distribution of sensitive habitats in the Barents Sea and the impacts of trawling on this habitats would be obtained through the MAREANO project within the timeframe of this certificate.

The client should present results from MAREANO project at every surveillance audit, and demonstrate, if required, that necessary actions are taken in order to protect sensitive habitats from destruction.

### Condition 2 - NSI comments and action plan

FAO report 472 “Impacts of trawling and scallop dredging on benthic habitats and communities” includes several studies of shrimp trawling in the North Atlantic. No clear and consistent effects attributable to shrimp trawling on clayey-silt bottom were detected in these studies. The Norwegian CWP fishery in the Barents Sea takes place on clayey-silt bottom and the chance of imposing damage to coral reefs is probably small compared with other fisheries.

### Action 2

The NESC on behalf of Norwegian shrimp industry will monitor results from the MAREANO project, and should the results indicate significant impacts of shrimp trawling on sensitive habitats, take an immediate action in order to reduce impact of trawling and eliminate the risk of impairing structure and function of sensitive habitats in the unit of certification. An evaluation of the FAO report 472, the results from shrimp trawling studies, should be performed and related to the current Norwegian CWP fisheries in the Barents Sea.



## MSC FISHERY ASSESSMENT REPORT

### Condition 3: Discards of by-catch

#### **PI CATEGORY 3.1.4**

**PI:** The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.

**SG:** 80

#### **ASSESSMENT TEAM FINDINGS:**

Under the Marine Resources Act, landing of all bycatch is mandatory. But since the responsibility & costs for disposal of all non-commercial by-catches are borne solemnly by the fishermen, this requirement is not deemed practical and could be overseen when the big amounts of polar cod by-catch are taken by Norwegian offshore shrimp trawler fleet.

Directorate of Fisheries tends to agree with the fishermen on the fact that it is not always reasonable to bring big accidental catches of polar cod onshore and the work is currently underway in order to see if the regulation could be amended. However, the fact that the mandatory regulation does not seem to be adequately enforced and monitored by management raise some concern and pose a condition to certification.

#### **PI CATEGORY 3.2.3**

**PI:** Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with.

**SG:** 80

#### **ASSESSMENT TEAM FINDINGS:**

A monitoring, control and surveillance system has been implemented. In most instances the ability to enforce management measures, strategies and/or rules has been demonstrated. However, the fishery has demonstrated an inability to enforce the regulation that requires the mandatory landing of all bycatch.

#### **ACTION:**

Until the regulation on obligatory landing of all-bycatch is amended by Norwegian Directorate of fisheries, allowing fishermen to discard accidental catches of polar cod, the client must comply with existing regulation under Marine Resource Act and land all by-catches of polar cod as required.

#### **TIMESCALE:**

By the first surveillance audit, client must present clear evidence that they comply with the regulation or that the regulation was amended allowing them to discard accidental by-catches of polar cod.

If discarding of by-catch of polar cod will be allowed, the client vessels are required to adopt a registration system which can provide clear statistical evidence on the scope of polar cod discards.



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## MSC FISHERY ASSESSMENT REPORT

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### Condition 3 - NSI comments and action plan

New regulation on discard of by catch including Polar Cod is implemented.

#### Action 3

NSI will support the regulation set in J-64-2011 which prohibits discard of bycatch of Polar Cod if the volume exceeds 5% of total volume in one haul. The fishermans sales organisations will be asked to improve their registration system in order to provide statistics on all species specified in J-64-2011.

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Ingrid Dahl Skarstein, Tromsø, 18.07.2011

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Submitted July 2011 by The Norwegian Seafood Export Council on behalf of the Norwegian Seafood Industry advisory committee, appointed by the national industry organizations representing all fleet and shore based industry groups of Norwegian fisheries.

# MSC FISHERY ASSESSMENT REPORT

## ENCLOSURE 7: PEER REVIEW COMMENTS

### Peer Review A.

#### Overall Opinion

<i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i>	Yes	Certification Body Response
<p><u>Justification:</u> I believe that the assessment team has arrived at the correct conclusion based on the evidence presented. The fishery is clearly at a very low level of exploitation and has been for its 40 year history; with biomass currently well above Bmsy. The fishery is subject to a range of management regulations which ensures that it is exploited in a sustainable manner with appropriate consideration for its potential impact on the wider marine ecosystem. However the fishery lacks both an explicit management plan and harvest control rules and there is an issue in relation to compliance with by-catch regulations. It is entirely appropriate therefore that conditions should be attached to the certification. In general I agree with the scores allocated by the assessment team, and although I have commented on a few indicators where I believe that the assessment team has over- or under-scored, these are relatively minor points and do not detract from my overall view that the assessment team have fully justified their scores for the fishery.</p>		<p>The score for PI 2.2.1 is reduced from 100 to 95.</p> <p>The score for PI 2.2.3 is reduced from 90 to 80.</p> <p>The score for PI 2.3.1 is reduced from 100 to 95.</p> <p>The score for PI 2.5.2 is reduced from 95 to 90.</p> <p>The score for PI 3.2.4 is reduced from 100 to 95.</p>
<i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i>	Yes	Certification Body Response
<p><u>Justification:</u> <b>Condition 1</b> is absolutely essential. Whilst it is recognised that there is an implicit management plan in place, the management plan and harvest control rules need to be explicitly stated as a condition of certification. I would suggest therefore that condition 1 should be broadened to include an explicit management plan. The suggested timescale of introducing a management plan and HCRs is “within the timeframe of this certificate” and I believe that the SG80 outcome should be achieved within the specified timeframe. Whilst it may be necessary to carry out some simulation modelling of potential HCRs, the components of a management plan are already in place, and the development of such an explicit plan should be a priority.</p> <p><b>Condition 2</b> is appropriately written to achieve the SG80 outcome and is required within a realistic timeframe.</p> <p><b>Condition 3.</b> The failure of fishing vessels to land all polar cod by-catch and the lack of enforcement of the regulation is a deficiency in an otherwise well-managed approach to assessing the level of discards in the fishery. There are logistical reasons underlying this deficiency in the system, not least a financial disincentive for the fishermen as they have to bear the costs of disposing of the by-catch. I agree however that this is an important condition for certification. It appears that new legislation is being introduced which recognises the logistical problem with polar cod by-catches by permitting discarding if the volume is less than 5% of the total volume in one haul, which is a step forward, but I agree that in addition a system for accurately recording these discards is essential. This condition should be met well within the timeframe of the certificate and should achieve the SG80 outcome.</p>		<p>Condition 1 is amended to include an explicit harvest control rule and explicit management plan.</p>

## MSC FISHERY ASSESSMENT REPORT

If included:

<b>Do you think the client action plan is sufficient to close the conditions raised?</b>	<b>No</b>	<b>Certification Body Response</b>
<p><u>Justification:</u> Reluctantly I have to conclude that the client action plan is not sufficient to close the conditions raised. This is <b>not</b> in any way a criticism of the client's action plan, it simply reflects that undertaking direct action in relation to the conditions raised is essentially outside the remit of the client, the Norwegian Seafood Export Council, as set out on page 14 of the assessment report. I note that they have set up a formal advisory committee and associated working group to lobby for the actions required to meet the conditions which is an important supporting step forward by the client, but the client itself cannot introduce management legislation.</p> <p><u>Condition 1.</u> The client considers that the timeframe for implementing an HCR across the whole area might exceed the timeframe of the certificate, which is at odds with the assessment team's assertion.</p> <p><u>Condition 2.</u> The client's response is acceptable given that the client represents all fishing vessels in the fleet, and can actively promote and support voluntary changes in fishing pattern in advance of the introduction of formal legislation.</p> <p><u>Condition 3.</u> The client cannot itself amend regulations but is supporting the amendment to the regulations to prohibit discarding of polar cod at volumes of more than 5% of total volume in one haul. Perhaps more important is the need to have an effective registration system for recording levels of discarded polar cod, and the client can play a key role in stressing the importance of this. At present the client will "...ask fishermen's sales organisations to improve their registration scheme..", but I would like to see more active promotion and lobbying for such an improved scheme.</p>		<p><u>Condition 1:</u> Assessment team agrees that the client itself cannot introduce management legislation. However, since the client represents the entire Norwegian fishing industry, it is in the view of the assessment team that lobbying activities could actually speed up the process of implementation of the explicit management plan in the unit of certification. It is the requirement of the certification that such an explicit management plan shall be implemented within timeframe of the certificate.</p> <p><u>Condition 3:</u> Condition 3 clearly states that the client vessels are <u>required</u> to adopt a registration system which can provide clear statistical evidence on the scope of polar cod discards. In the event of successful certification, compliance with condition 3 will be followed up at annual surveillance audits.</p>

### General Comments on the Assessment Report

From the information available, it is clear that this shrimp stock is relatively under-exploited and fulfils most of the criteria for certification. Although the landings are significantly below the TAC for the stock agreed by ICES and recent management has ensured that the stock has been maintained above Bmsy level, there is an obvious gap in the management regime for this stock due to the lack of an explicit management plan and harvest control rules. Whilst accepting that with the very low levels of exploitation both currently and over the 40 year history of the fishery, there has been no imminent need to develop such tools, I agree with the assessment team that explicit harvest control rules need to be put in place. One key component of a management plan is the control of fishing effort, and it is not clear from the information given whether there is significant latent effort in the fishery because currently most licensed offshore trawlers target more valuable species such as cod and haddock, but potentially may be able increase their effort in the shrimp fishery in the future. Licensed vessels are limited by fishing days, but the limits apply to the national fleet as a whole, and it is not clear therefore what scope there may be for individual vessels to increase significantly their effort in the shrimp fishery. My understanding also is that "passive" vessels can get a licence and become "active" vessels within a year, and that inshore trawlers, although much smaller in number than in the recent past, are not licensed. Recent history shows a decline in fishing effort, but this may be driven by current low shrimp prices and high fuel costs, so it is still important that any explicit management plan considers how fishing effort will be controlled.

## MSC FISHERY ASSESSMENT REPORT

### DNV Assessment team comment:

The current Norwegian effort allocated to shrimp trawling from trawlers holding multiple licenses are dependent on earnings in alternative fisheries. Present the prices, quotas and catch rates of cod, haddock and saithe, combined with higher fuel costs in shrimp trawling, gives this trawler fleet a better profitability when fishing for ground fish than shrimps. Theoretically there is a latent effort available, but a lot of triggering factors have to occur simultaneously to make a shift in profitability in favor of shrimp fishery and hence release the effort. This is possible, but not likely. Another factor making this less likely is that the deep sea trawler fleet still is structuring and the number of trawlers is decreasing, resulting in reduced latent effort available in the future.

The fishing day regulation only applies to the Svalbard Zone, and the Norwegian EZ is closed to foreign vessels. Due to frequent use of closures of protected areas in the Norwegian EZ, shutting out the fleet from some of its best fishing grounds the same low levels of fishing effort is found throughout ICES SA I and II.

Since the harvest control rules is under preparation and not exactly known it is difficult to be specific on this. In general the licensing and effort regime can be used to reduce effort by implementing a more active withdrawal policy on unused licenses and/or restricting the effort of existing effort by reducing fishing days in the Svalbard zone as well as introducing fishing days to Norwegian vessels in the Norwegian EZ. This also might be reversed in a situation that allows higher catches. Both decreasing and increasing of fishing effort can be handled within current legislation and the established regulatory chain.

In relation to retained and by-catch species, the assessment team have concluded that effectively there are no retained species as defined by the MSC FAM. This conclusion may not be universally agreed and certainly it boosts the overall score for principle 2 by making 2.1.1, 2.1.2 and 2.1.3 meet the SG100 post. However if, for example, these three indicators were scored at only 80 instead of 100, then a quick calculation suggests that the overall score for principle 2 would be 87.7 and not 91.7, so I do not think the decision to award component 2.1 a score of 100 is ultimately important to the overall decision on certification.

### DNV Assessment team comment:

Assessment team spent time at scoring meeting deciding how best to handle this. In any case, incidental catches were considered to be negligible. The justification for PI 2.2.3 is however amended and the score is reduced from 90 to 80.

Traceability problems should be minimal as certification applies to the entire Norwegian fishing fleet for shrimp. However shrimp is landed by Norwegian vessels to processing plants outside Norway, and the certification will only cover Norwegian vessels fishing this stock, so care may need to be taken to ensure that non-certified shrimp does not enter the chain of custody.

### DNV Assessment team comment:

Chain of Custody certification shall commence at the point of landing in order to ensure that non-certified shrimp do not enter into the chain.



## MSC FISHERY ASSESSMENT REPORT

### Performance Indicator Review

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.1.1	Yes	Yes	NA	The history of the fishery as assessed by the NAFO/ICES <i>Pandalus</i> WG supports the score for this indicator. Catches are significantly below the TAC as advised by ICES, biomass is well above Bmsy and close to carrying capacity, fishing effort has declined in recent years, whilst standardised CPUE has increased.	
1.1.2	Yes	Yes	NA	One consequence of the low level of exploitation during the history of the fishery is that no specific target reference point has been explicitly set, but the probability of the stock falling below two biomass reference points has been calculated, and on that basis, I believe that the score of 80 is justified. The NAFO/ICES WG uses standard NAFO reference points which differ slightly from those used within the standard ICES precautionary approach.	
1.1.3	Yes	Yes	NA	The stock is not currently depleted so this indicator is not applicable.	



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.2.1	Yes	Yes	NA	The fishery would undoubtedly benefit from a specific management plan. Again, the fishery is somewhat a victim of its own success, as the low level of exploitation with declining fishing effort and the high biomass estimates throughout the history of the fishery have ensured that a detailed explicit management plan has not been a priority requirement in the past.	
1.2.2	Yes	Yes	Yes	Although there are a range of management rules in place designed to ensure that over-exploitation does not occur, there are no well-defined harvest control rules in place, so I agree that the fishery scores under 80 for this indicator. This is an important deficiency in the fisheries management regime, and thus it is highly appropriate that there should be a condition relating to this indicator if the fishery is to gain certification.	
1.2.3	Yes	Yes	NA	A wide range of monitoring is undertaken which feeds into the assessment model which addresses uncertainties, and which is essentially peer-reviewed under the ICES system.	



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.2.4	Yes	No	NA	The stock is assessed using an approach agreed within ICES and which takes into account biological information, some uncertainty and is essentially peer-reviewed within the ICES system. However I believe that the score of 95 is a little high given that the estimates of biomass appear to have high variances, the model does not appear to always successfully predict changes in recruitment, shrimp population dynamics are strongly influenced by predation and the impact of cod predation is not well understood or modelled, and there is no formal external peer review mechanism except through the ICES WG system. However these are not critical points and the fishery should still score highly on this indicator.	Assessment team remains content with the current score of 95. As Reviewer A states, these are not critical points. The assessment team recognizes that the model is not perfect (none are) but believes that its qualities meet the scoring issues that justify the score of 95.
2.1.1	Yes	Yes	NA	The assessors have considered that effectively there are no retained species (as defined by the MSC FAM) except for shrimp which is covered under principle 1, and therefore the FAM considers that the fishery meets the SG100 level. I believe that this is a justifiable conclusion.	
2.1.2	Yes	Yes	NA	(see comments above under 2.1.1)	



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.1.3	Yes	Yes	NA	(see comments above under 2.1.1)	
2.2.1	Yes	No	NA	Selective gear, area closures if by-catches reach pre-determined levels and the relatively small-scale nature of the shrimp fishery relative to the distribution of the main by-catch species justify a very high score. Whilst there is therefore a very low level of by-catch in terms of numbers landed, there is however little evidence of whether injuries to individuals released through the sorting grids can lead to mortality, suggesting that the score should be slightly less than 100.	This is a good point made by both reviewers. Although by-catch in the fishery is considered negligible, the fate of those escaping the trawl is uncertain, suggesting a lower score (95) is appropriate. The justification for PI 2.2.1 is amended and the score is reduced from 100 to 95.
2.2.2	Yes	Yes	NA	There is a clear strategy in place for minimising by-catch and the very low level of bycatch within the fishery provides strong evidence that the strategy is working.	
2.2.3	Yes	Yes	NA	By-catch rates appear to be very low, but there is undoubtedly a need to record by-catch information more effectively. This is not necessarily a priority requirement because regular reviews suggest that fishing mortality on these species is virtually zero, and therefore there is no need for a condition to be attached to the certification.	Assessment team spent time at scoring meeting deciding how best to handle this. In any case, incidental catches were considered to be negligible. The justification for PI 2.2.3 is however amended and the score is reduced from 90 to 80.



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.3.1	Yes	Yes	NA	By-catch levels are negligible, and vessels are required to move if redfish by-catch reaches pre-determined levels, so the assessment team's conclusion is justified.	
2.3.2	Yes	No	NA	There is a clear strategy in place for minimising by-catch of ETP species and empirical data from the fishery, where all by-catch must be retained and landed, provide strong evidence that the strategy is working successfully. However the management strategy does not include by-catch limits for ETP species other than redfish, and such limits might be considered to be a useful addition to the overall precautionary management strategy.	There are no by-catch limits for other ETP species, likely because they have not been known to be present in any significant amounts in the catches. Any such limits would be arbitrary and of little relevance. Also, the penalty for uncertainty in escape mortality was in 2.3.1.
2.3.3	Yes	Yes	NA	The score of 80 is justified in that outcome status cannot be estimated quantitatively for all ETP by-catch species.	



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.4.1	Yes	No	Yes	<p>There is clearly a significant gap in knowledge in relation to this indicator / component. Knowledge of the impacts of shrimp trawling are not complete, and there are major gaps in knowledge of the seabed habitat and its diversity within the region, the latter which will be rectified hopefully through the MAREANO project. However all evidence suggests that the shrimp fishery operates over a minimal area of the shrimp habitat, although the key data are in an unpublished report. On that basis, the score of 60 seems unreasonably low considering that the PI should be "<i>.. considered on a regional or bioregional basis..</i>". Nevertheless, I agree that the fishery's performance does not meet the SG80 level and it is appropriate therefore that a condition should be raised in relation to this PI.</p>	The scoring issues for SG60 and 80 are clearly stated (unlikely = 60, highly unlikely = 80). There was no justification for awarding an intermediate score for this PI.
2.4.2	Yes	Yes	NA	<p>The score of 80 seems justified because there is currently no strategy in place for managing the impact of the fishery on the habitat types. One is currently in development which will ensure that the fishery scores more highly on this indicator in any re-assessment.</p>	



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.4.3	Yes	Yes	NA	There is already a broad understanding of the nature of the habitat and the potential effects of shrimp trawling, but more is coming out of current research programmes, and a score of 85 is a fair reflection of current knowledge. A key area in future will be the potential to detect any changes over time in habitat distributions.	
2.5.1	Yes	Yes	NA	The fishery is highly unlikely to disrupt the ecosystem structure, and there is some evidence supporting that conclusion, although it should be emphasised that the key data quantifying the distribution of the shrimp fishery in relation to shrimp habitat are unpublished.	
2.5.2	Yes	Yes	NA	The Marine Resources Act provides the strategy for managing the fishery in relation to potential impacts of the fishery on the ecosystem, and it is really only the incomplete understanding of ecosystem function which mitigates against meeting the SG100 level.	



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.5.3	Yes	Yes	NA	Whilst information is available which allows a broad understanding of the key functions of the ecosystem, there are inevitable gaps in relation to non-commercial species which means that this indicator does not meet the SG100 level.	
3.1.1	Yes	Yes	NA	I agree that the fishery fully meets all the criteria necessary to meet the SG100 level.	
3.1.2	Yes	Yes	NA	The consultation process appears to be enshrined within the legal instruments for the management of the fisheries.	
3.1.3	Yes	Yes	Yes	I agree with the assessment team that whilst there are implicit management rules for the fishery, there is no explicit management plan or harvest control rules, and thus the score of 70 is a fair reflection of the fishery performance in relation to this indicator, and it is appropriate that a condition for certification should be included.	



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.1.4	Yes	Yes	Yes	The fact that the cost for disposal of non-commercial bycatch must be borne by fishermen creates an unfortunate disincentive for fishermen to comply with the regulations, and this is not helped by poor monitoring by the fisheries management authorities. A condition adhering to the certification of this fishery is therefore highly appropriate.	
3.2.1	Yes	Yes	Yes	There is no explicit management plan or harvest control rules and so the score of 70 is appropriate, as is the condition for certification.	
3.2.2	Yes	Yes	NA	The relevant authorities – both scientific and management/regulatory - have clear decision making processes and formal reporting of how those decisions were reached, and whilst these could be improved, a score of 95 is appropriate.	



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.2.3	Yes	Yes	Yes	In general there are good monitoring, control and surveillance mechanisms in place, and fishermen generally comply with the regulations. However the issue of non-compliance with the mandatory retention and landing of all bycatch species seriously undermines the score for this indicator and the score of 75 is justified, and it is appropriate that this indicator forms part of condition 3.	
3.2.4	Yes	No	NA	I am not sure that the research programme is addressing all needs and perhaps a score of 100 is too high. For example, there appear to be some gaps in the knowledge of sex and length distributions, and hence predicting recruitment to the fishable stock.	Point taken in the context on "comprehensive". The score is lowered from 100 to 95. Justification for PI 3.2.4 is amended.



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.2.5	Yes	No	NA	I cannot really assess from the information presented whether there has been sufficient external peer review of the management system to justify the score of 100. The assessment notes that there have been two major scientific reviews over the last two decades by independent committees, but no information is available to assess the nature of those two reviews.	<p>On request from Norwegian Ministry of Fisheries and Coastal affairs, Oxford Research company has conducted an evaluation of IMR covering following:</p> <ul style="list-style-type: none"> <li>▪ goal achievement</li> <li>▪ effectiveness in achievement of goals</li> <li>▪ scientific standard</li> <li>▪ scientific cooperation</li> <li>▪ organisation</li> <li>▪ management</li> <li>▪ finances</li> </ul> <p>In addition to that, on request from Norwegian Research Council, IMR's scientific work was evaluated within the fields of bio-science and geo-science.</p> <p>Results from both reviews would be published by IMR before 2012.</p>

## MSC FISHERY ASSESSMENT REPORT

### Peer Review B.

#### Overall Opinion

<i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i>	Yes	Certification Body Response
<p><i>Justification:</i>            This fishery benefits from being regularly assessed by the NAFO/ICES Pandalus Assessment Group and having management advice provided by ICES. They have concluded that the stock biomass estimates has been above <math>B_{MSY}</math> and fishing mortality below <math>F_{MSY}</math> throughout the history of the fishery. Recent catches have been just one third of the ICES recommended TAC. On this basis it is relatively straight forward to conclude that MSC Principle 1 is well in excess of the “exemplary or best practice” score of 80. However, concern was rightly raised over the lack of a harvest control rule (HCR). Condition 1 has been specified to address this issue (see next section for comments).</p> <p>It has not been possible to say, with a high degree of certainty, that the fishery is “highly unlikely” to reduce structure and function of sensitive habitats in the Barents Sea to a point where there would be serious or irreversible harm. However, the main fishery is over soft mud sediments where adverse impacts from trawling are unlikely. Sensitive habitat areas are already protected and the area currently trawled is relatively small compared to the overall prawn grounds. I have questioned the rather low score of 60 for 2.4.1, but concur with the need for Condition 2 (see next section for comments).</p> <p>The management regime is strong and well operated. However, the issue of poor compliance with the regulation to land all discards was not adequately addressed in the Report or Scoring and Comment Table, but the overall score for Principle 3 is unlikely to change significantly.</p> <p>I have made some suggestions for re-scoring. Even if these are accepted I would not expect the overall scores for P1, P2 and P3 to be &lt;80. I agree with the conclusion to certify the fishery, subject to the improved Conditions I have recommended (see comments below).</p>		<p>The score for PI 2.2.1 is reduced from 100 to 95.</p> <p>The score for PI 2.2.3 is reduced from 90 to 80.</p> <p>The score for PI. 2.4.1 withstands. There is a significant gap in knowledge of the seabed habitat and its diversity within the unit of certification. The scoring issues for SG60 and 80 are clearly stated (unlikely = 60, highly unlikely = 80). The fishery’s performance does not meet the SG80 level and there was no justification for awarding an intermediate score for this PI.</p> <p>The score for PI 2.3.1 is reduced from 100 to 95.</p> <p>The score for PI 2.5.2 is reduced from 95 to 90.</p> <p>The score for PI 3.2.4 is reduced from 100 to 95.</p>

## MSC FISHERY ASSESSMENT REPORT

<b>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</b>	<b>Yes 1 &amp; 2 No 3</b>	<b>Certification Body Response</b>
<p><b>Justification:</b> I have questioned (a) the vigor of the wording of Conditions 1, 2 and 3, (b) what influence the NSI/NSEC can exert on the management authorities, and (c) the timescale for completion of the implementation of a harvest control rule (Condition 1).</p> <p>Condition 3 covers polar cod, but not other species (target, by-catch, retained and ETP species). It raises the issue of poor regulation of the land all discards rule, but does not propose a solution.</p>		<p><b>Condition 1:</b> (a) Condition 1 is amended to include an explicit harvest control rule and explicit management plan.</p> <p>(b) It is in the view of the assessment team that, since the client represents the entire Norwegian fishing industry, lobbying activities could actually help to speed up the process of implementation of the explicit management plan in the unit of certification.</p> <p>(c) It is the requirement of the certification that such an explicit management plan shall be implemented within timeframe of the certificate.</p> <p><b>Condition 3:</b> Assessment team have argued that by-catch is negligible. However, we have information that shows polar cod cause problems from time to time. The condition was raised in that context, not an overall by-catch issue. In addition to that, the new legislation has just been introduced which recognises the problem with polar cod by-catches and permits discarding of polar cod only if the volume is less than 5% of the total volume in one haul. The client vessels are <u>required</u> to adopt a registration system which can provide clear statistical evidence on the scope of polar cod discards.</p>
<p><b>Do you think the client action plan is sufficient to close the conditions raised?</b></p> <p><b>Justification:</b> I do not consider that a “good faith effort” (Enclosure 6, first paragraph) was a strong enough commitment by the clients to meet the Conditions specified. [Maybe something was lost in translation?]</p> <p>Condition 1. I do not accept that “the timeframe for implementing a harvest control rule for the whole area could easily exceed the certificate.” (page 69, NSI comment Condition 1). As Norwegian authorities are the sole managers of this fishery they should be able to easily implement a HCR within the timescale set. However, it is not clear what influence the NSI/NSEC has with the authorities, and to what extent they (the authorities) are committed to implementing a HCR.</p> <p>Condition 2. Appropriate action.</p>	<b>No</b>	<p><b>Certification Body Response</b></p> <p><b>Condition 1:</b> The timeframe for implementing an explicit harvest control rule shall not exceed the timeframe of the certificate. It is the requirement of the certification that an explicit management plan and harvest control rule shall be implemented within timeframe of the certificate. Assessment team understands that the client itself cannot introduce management legislation. However, since the client represents the entire Norwegian fishing industry, it is in the view of the assessment team that lobbying activities could actually speed up the process of implementation of the explicit management plan in the unit of certification.</p>



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Condition 3. This Condition has to some extent been overtaken by the implementation of an allowance to discard polar cod. The NSI/NSEC action point "The fishermen's sales organisations will be asked to improve their registration system in order to provide statistics on all species specified in J-64-2011." will need to be effectively monitored by the enforcement authorities (but current performance does not engender confidence), and carefully evaluated during each annual certification surveillance report.

### Condition 3:

Condition 3 clearly states that the client vessels are required to adopt a registration system which can provide clear statistical evidence on the scope of polar cod discards. In the event of successful certification, compliance with condition 3 will be followed up at annual surveillance audits and the client would have to demonstrate which specific measures were taken in order to improve the registration scheme.

### General Comments on the Assessment Report

#### **Overall Comments.**

My review is based on a reading of the Peer Review version of the Report and Scoring and Comment Table. I have made no attempt to access or peruse the extensive list of publications cited by the assessment team, with the exception of the NAFO/ICES Pandalus Assessment Group report and the recent ICES advice.

My comments are referenced to the section numbering in the Report and to page numbers as displayed in Adobe Reader X. Where section headings are omitted I had no comment to make. Relatively minor editorial changes have been added to a file copy of the Peer Review Report and passed to Det Norske Veritas - DNV Certification AS for action. [Many of the comments addressed below have also been left in the file copy to help the assessment team locate the relevant sections.]

This is a competent and comprehensive assessment of the Norway North East Arctic cold water prawn fishery against the MSC Principles and Criteria for Sustainable Fisheries. The Report provides an authoritative overview of the fishery and the issues that relate to the three MSC Principles. I concur with most of comments and scoring in the Report and Scoring Table, but have drawn attention to those I consider need re-assessment.

**Summary. 1.6. Conditions, Recommendations and timescales.** [Many of these comments also apply further down in the Report where the Conditions are repeated.]

The scores given are not those presented in Enclosure 8 - Scoring Table and Enclosure 9 – Scoring Comment table. These need to be corrected.

#### **DNV Assessment team comment:**

Enclosure 9 (previously Enclosure 8) - Scoring Table and Enclosure 10 (previously Enclosure 9) – Scoring Comment table are amended.

Condition 1 - Action plan. As mentioned above, the wording "is expected" is not strong enough for a Condition. [Expect = regard as likely; assume as future event; look for as due; suppose. (Source "The Little Oxford Dictionary")]. What influence can NSEC be expected to have on the "authorities", and are the authorities committed to setting an HCR? I have experience of a fishery that, in my opinion, was let down by the lack of action from the relevant authorities, resulting in the de-certification of the fishery.

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## MSC FISHERY ASSESSMENT REPORT

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**DNV Assessment team comment:**

Wording of condition 1 is amended.

Condition 1 - Timescale. Five years is a long time to allow for the implementation of a HCR, despite what the clients suggest. As there is ongoing work to address this issue a shorter timescale should be set.

**DNV Assessment team comment:**

Taking into account the condition of the shrimp stock and scale of the fishery, assessment team considers 5 years as a reasonable timeframe for implementation of explicit management plan and harvest control rule.

Condition 2 - PI Category 2.4.1. The score should be 60 (but see my comments at 2.4.1 about this score). If my views are accepted some of the text in this Condition may need to be revised.

**DNV Assessment team comment:**

Information earlier in the report (Section 3.4) describes the gear used in the fishery and states that rock-hopper gear is used in rough bottom areas. The scoring issues for SG60 and 80 are clearly stated (unlikely = 60, highly unlikely = 80). There was no justification for awarding an intermediate score for this PI.

Condition 3 – Action. As mentioned above, the wording "is expected" is not strong enough for a Condition. Condition 3 covers polar cod, but not other species (target, by-catch, retained and ETP species). It raises the issue of poor regulation of the land all discards rule, but does not propose a solution. The recent dispensation for polar cod, in my view, potentially undermines the regulation.

**DNV Assessment team comment:**

Assessment team have argued that by-catch is negligible. However, we have information that shows polar cod cause problems from time to time. The condition was raised in that context, not an overall by-catch issue.

In addition to that, the new legislation has just been introduced which recognises the problem with polar cod by-catches and permits discarding of polar cod only if the volume is less than 5% of the total volume in one haul.

The client vessels are required to adopt a registration system which can provide clear statistical evidence on the scope of polar cod discards.

### 3 THE CLIENT FISHERY.

3.1 Norwegian Seafood Export Council. The client is very much a marketing and promoting organization. It is a pity it does not have some sustainable management objectives within its focus areas. They should be given credit for applying for MSC certification, though I would have expected to see a greater level of commitment in their action plan responses to the Conditions set.

3.2.1 Offshore fishery. I am confused about the about the responsibilities within the Barents Sea and the management of the prawn/shrimp fishery. Quote “Norwegian vessels have around 90% of total quota for shrimp in the Barents Sea, while Russia, EU, Iceland and Greenland account for the remainder.” If there is "quota" there should be a TAC – but there isn't one! (See also comment below 8.2.)

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**DNV Assessment team comment:**

Section 3.2.1 is amended.

only)". There is scope for clarification.

**DNV Assessment team comment:**

There is no TAC in the Norwegian zone. TAC is set in the Russian EEZ.

3.2.2 Coastal Fishery. Some clarification is required to this section as it discusses the coastal fishery along the whole of the Norwegian coast without explaining which part is outside the Unit of Certification (UoC). 62°N is the southern limit of the UoC, and the Skageraak is mentioned which is not in the UoC.

**DNV Assessment team comment:**

The UoC covers Barents Sea (ICES Division I and II). Skageraak area is outside the UoC.

### 3.4 Fishing practices and gear used.

Quote, 5<sup>th</sup> Paragraph: "The minimum landing size of shrimp is 6mm, while the average size of shrimp caught by Norwegian vessels is around 7-8 mm." I am confused! Hansen & Aschan quote 15mm CL for the minimum landing size (MLS) in Svalbard waters (<http://journal.nafo.int/j27/hansen.pdf>). Does this apply in ICES SA I & II? Quote on page 21: ".....13 to 16mm CL which are below commercial size.....". Maybe the 6 mm quoted is the carapace width, equivalent to 15mm carapace length, and is the bar spacing used in sorting sieves (not the Nordmore grid which has 22mm bar spacing). Please clarify what the MLS should be and how measured.

Are there any relevant mesh selection studies relating the 35mm mesh to the MLS? If there are, it would be useful to quote them to justify the use of the 35 mm mesh.

**DNV Assessment team comment:**

The minimum landing size of shrimp is 6cm or 15mm carapace length. Section 3.4 is amended.

Quote, 2<sup>nd</sup> parag: "Most of the fishing vessels use double trawling, only 3 vessels use triple trawling and none use single trawling.". The 2009 NAFO/ICES Assessment Group states that 50% of effort now with triple trawls - which is correct?

**DNV Assessment team comment:**

According to NSEC most of the Norwegian fishing vessels use double trawling, only 3 vessels use triple trawling and none use single trawling.

Quote, 3rd parag: "Some vessels operate in the areas with a harder sea-bottom, and use rock – hopper gear." I have raised the question about the use of rock-hopper gear elsewhere (Report page 26, Section 7.3; Report page 70, Condition 2 - NSI comments and action plan; Scoring Comment Table 2.4.1). This needs clarification as to the extent of the use of rock-hopper gear. It is particularly relevant with respect to Condition 2. The clients may be able to clarify whether rock-hopper gear is used.

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**DNV Assessment team comment:**

Information in the report (Section 3.4) describes the gear used in the fishery and states that rock-hopper gear is used in rough bottom areas.

Quote, 3<sup>rd</sup> parag: “There are also several ongoing projects which are aimed to develop a more effective and environmentally friendly trawl gear for shrimp fisheries.” Briefly explain the design features and objectives as they may be relevant to the scoring of Principle 2.

**DNV Assessment team comment:**

The project mentioned is Arctic SWAN. Main objective of the project is to design a trawl concept for shrimp which will reduce trawl resistance with minimum 25%, while efficiency of shrimp fishery is maintained.

Figure 3.4. A more detailed figure of the unit of certification and named grounds (e.g. Svalbard) would be helpful to readers not familiar with the area. [E.g. see Figure 3.4.9.3 in the November 2010 ICES advice.]

**DNV Assessment team comment:**

It is in the view of the assessment team that Figure 3.4 “Main fishing grounds for Norwegian shrimp in the ICES areas I and II” is illustrative enough for a general reader. It shows clearly the coast of Norway and Svalbard area.

## 5 THE NORTH EAST ARCTIC COLD WATER PRAWN STOCK

### 5.1 The biology of the North East Arctic cold water prawn stock

1<sup>st</sup> parag. Would it be worthwhile to point out that the main fishery is outside the period when females are carrying eggs? This potentially reduces the impact of exploitation on recruitment.

**DNV Assessment team comment:**

Assessment team agrees with a point made by reviewer. Section 5.1 is revised accordingly.

3<sup>rd</sup> parag. What is the sex ratio in catches? Any implications of exploiting small males or conversely females only?

**DNV Assessment team comment:**

Catches are composed of shrimp > 16mm CL, representing larger males and females. The sex ratio in the catches is variable between years, depending on the strength of recruitment. Male shrimp between 13 and 16 mm CL are considered as recruitment over 1 to 2 years. Smaller males are not a significant component of the catches. Commercial sampling shows that there is always a mix of males and females in the catches. Irrespective of the demand for the largest shrimp (i.e. mostly females), recruitment overfishing has not been demonstrated for this stock.

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## MSC FISHERY ASSESSMENT REPORT

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### 7 ASSESSMENT OF ECOSYSTEM INTERACTIONS

#### 7.1 Retained species and by-catch

Quote: “Since the mandatory use of the Nordmøre sorting grid (1992), small cod, haddock, Greenland halibut, capelin and redfish (5–25 cm) are the only commercial species taken as by-catch.”. I find this statement difficult to understand. Surely the object of the grid is to sort out and release small fish, but here small (5-25cm) fish are being retained. This section needs more explanation of the effectiveness of the sorting grid.

**DNV Assessment team comment:**

Grids are designed to minimize by-catch and, in this respect, they are highly effective. However, smaller fish of several species that can pass through the grid spacing (22 mm) are caught but, for this fishery, the evidence suggests that the amount is negligible. Section 7.1 is amended accordingly.

#### 7.5 The North East Arctic cold water prawn fisheries impact on the surrounding ecosystems

The conclusions in this section are based on the current level of fishing effort with a catch 1/3rd of ICES advice. While the assessment is looking at the current situation, a comment would be useful about the possible impacts if the fishery were to expand to take catches equivalent to the ICES recommended TAC.

**DNV Assessment team comment:**

The IMR analysis showed that the area trawled by the fishery (about 15,000 km<sup>2</sup>) is less than 2% of the estimated shrimp habitat in the Barents Sea (about 850,00 km<sup>2</sup>). Even if catches were to increase to the level suggested by ICES, they would likely be taken from the known, well-established fishery areas. Therefore, a substantial increase in impact on ecosystems from increased catches would not be anticipated.

### 8 FISHERIES MANAGEMENT IN THE UNIT FOR CERTIFICATION

#### 8.2 Management objectives.

Quote: “There is no overall TAC established for this stock. A partial TAC, effective in the Russian zone only, is established..... The Norwegian government has no intention of establishing a TAC for areas under Norwegian jurisdiction in contrary to ICES advice.” Here and elsewhere it would be appropriate to explain why the Norwegian authorities have not taken onboard the ICES advice to set a TAC in the Norwegian sector. (See also comment above 3.2.1.)

**DNV Assessment team comment:**

The explanations from Norwegian officials are:

1. In the current situation and in the foreseeable future the catch will be well under recommended TAC, and harvest control rules under establishment are considered to be sufficient. Hence, there is no need to establish an unnecessary regulatory measure.
2. A possible establishing of a TAC most likely will trigger discussions between Russia and Norway about resource allocation which might include more valuable stocks than shrimps.

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Quote: “The fishery is regulated by access control executed as effort control (fishing days) and licensing,.....”. I assume that as the current catch is only 1/3<sup>rd</sup> of the ICES recommended TAC the effort control (fishing days) is non-limiting. Is there latent effort available to expand the catches? There is a comment in 8.2.1 International /EU level that the total fishing effort has in recent years been far below allowed levels at Svalbard. Is this the same throughout ICES SA I and II? Explain the implications and effectiveness of the current licensing and effort regime in the context of a future harvest control rule (Condition 1).

**DNV Assessment team comment:**

The current Norwegian effort allocated to shrimp trawling from trawlers holding multiple licenses are dependent on earnings in alternative fisheries. Present the prices, quotas and catch rates of cod, haddock and saithe, combined with higher fuel costs in shrimp trawling, gives this trawler fleet a better profitability when fishing for ground fish than shrimps. Theoretically there is a latent effort available, but a lot of triggering factors have to occur simultaneously to make a shift in profitability in favor of shrimp fishery and hence release the effort. This is possible, but not likely. Another factor making this less likely is that the deep sea trawler fleet still is structuring and the number of trawlers is decreasing, resulting in reduced latent effort available in the future.

The fishing day regulation only applies to the Svalbard Zone, and the Norwegian EZ is closed to foreign vessels. Due to frequent use of closures of protected areas in the Norwegian EZ, shutting out the fleet from some of its best fishing grounds the same low levels of fishing effort is found throughout ICES SA I and II.

Since the harvest control rules is under preparation and not exactly known it is difficult to be specific on this. In general the licensing and effort regime can be used to reduce effort by implementing a more active withdrawal policy on unused licenses and/or restricting the effort of existing effort by reducing fishing days in the Svalbard zone as well as introducing fishing days to Norwegian vessels in the Norwegian EZ. This also might be reversed in a situation that allows higher catches. Both decreasing and increasing of fishing effort can be handled within current legislation and the established regulatory chain.

### 8.3.2 National level

iii. Fishing days. It is not clear if the effort (fishing days) allocation apply solely to Svalbard or to some larger area. As there are allocations to non-Norwegians I assume this applies only at Svalbard where they are permitted to fish. This section needs clarification, particularly as it comes under the heading of “National level”. See also the above comment re effort control.

**DNV Assessment team comment:**

Foreign vessels are not allowed to trawl for shrimps in the Norwegian EZ.

Last paragraph. The issue of poor compliance with the regulation to land all discards was not adequately addressed here or elsewhere in the Report or Scoring Comment Table (3.1.4 in particular).

### 8.6.2 Level of compliance

2<sup>nd</sup> paragraph. This is all circumstantial evidence! What about the poor regulation of the landing all discards rule (see comments elsewhere)?




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**DNV Assessment team comment:**

Assessment team have argued that by-catch is negligible. However, we have information that shows polar cod cause problems from time to time. The condition was raised in that context, not an overall by-catch issue. In addition to that, the new legislation has just been introduced which recognises the problem with polar cod by-catches and permits discarding of polar cod only if the volume is less than 5% of the total volume in one haul. The client vessels are required to adopt a registration system which can provide clear statistical evidence on the scope of polar cod discards.

Figure 9.8.4a. How do the vessel numbers for “Norway North” compare with those quoted in the text and enclosures 2 & 3 – they seem to be different?

**DNV Assessment team comment:**

According to Norwegian Directorate of Fisheries, there are (per 15.7.2011) 58 licensed Norwegian shrimp trawlers over 65 foot. Half of these trawlers do not fullfill requirement for active participation in shrimp fisheries. Thus, there are around 30 licenced trawlers targeting shrimp in the unit of certification.

Figure 9.8.4a reflects that per 2011-03-14, there were 10 shrimp trawlers over 65 foot targeting shrimp in the Northern Norway.

ENCLOSURE 5: CLIENT COMMENTS. It would have been useful to have the client's comments translated into English so that the assessment team's comments could be directly related to those of the clients.

**DNV Assessment team comment:**

Answers of assessment team are provided in English and mirror client comments.



## MSC FISHERY ASSESSMENT REPORT

### Performance Indicator Review

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.1.1	Yes	Yes	NA		
1.1.2	Yes	Yes	NA		
1.1.3	NA	NA	NA		
1.2.1	Yes	Yes	NA		
1.2.2	Yes	Yes	Yes, but see comment	In Condition 1 the wording "is expected" is not strong enough for a Condition. What influence can NSEC be expected to have on the "authorities", and are the authorities committed to setting an HCR?	Condition 1 is amended.  The client represents the entire Norwegian fishing industry and it is in the view of the assessment team that lobbying activities could actually speed up the process of implementation of the explicit management plan in the unit of certification.
1.2.3	No	No	NA	Account has not been taken of the observation that the regulation that makes the landing of all by-catch mandatory is not adequately monitored by management. See 3.1.4. The score of 95 should be reconsidered.	The comment refers to the score of 95 for PI 1.2.3. There is no need to rescore because P1 deals only with the target species.
1.2.4	Yes	Yes	NA		



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<b>Performance Indicator</b>	<b>Has all the relevant information available been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	<b>Certification Body Response</b>
2.1.1	Yes	Yes	NA		
2.1.2	Yes	Yes	NA		
2.1.3	Yes	Yes	NA		
2.2.1	Yes	No	NA		This is a good point made by both reviewers. Although bycatch in the fishery is considered negligible, the fate of those escaping the trawl is uncertain, suggesting a lower score (95) is appropriate. The justification for PI 2.2.1 is amended and the score is reduced from 100 to 95.
2.2.2	Yes	No	NA		It is in the view of assessment team that we have imposed a penalty for uncertainty about escape mortality in 2.2.1. It appears the letter and intent of issues under 2.2.2 have been met.



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Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.2.3	No	Yes	NA	Add a comment about the uncertainty about sorting grid/gate escape mortality, which adds to the justification for the score of 90.	Assessment team spent time at scoring meeting deciding how best to handle this. In any case, incidental catches were considered to be negligible. The justification for PI 2.2.3 is however amended and the score is reduced from 90 to 80.
2.3.1	No	No	NA	Again the issue of escape mortality should feature and may justify a slightly reduced score.  See 3.1.4. which may influence the score.	The score for PI 2.3.1 is reduced from 100 to 95.
2.3.2	No	No	NA	Again the issue of escape mortality should feature and may justify a slightly reduced score.  See 3.1.4 which may influence the score.	There are no bycatch limits for other ETP species, likely because they have not been known to be present in any significant amounts in the catches. Any such limits would be arbitrary and of little relevance. Also, the penalty for uncertainty in escape mortality was in 2.3.1.



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Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.3.3	No	Yes/No? Depends on 3.1.4.	If the score is reduced to <80 a new Condition would be required.	Again the issue of escape mortality should feature.  See 3.1.4 which may influence the score.  As the current score is 80 a reduction would generate a Condition.	See response for PI 2.2.3 above.
2.4.1	Yes	No	Yes	Need to clarify if bobbins and rock-hopper gear are used outside 12 nm. Bearing in mind the economic pressures which currently limit the catch to 1/3rd of the ICES advice, it would seem unlikely that fishers would use heavy gear for shrimps.  I agree with Condition 2, though I think the score of 60 is too harsh, but should be <80. While it is not possible to say the fishery "is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm", it is possible to say that it is "unlikely", particularly as there is a partial mitigation strategy in place (see 2.4.2 which scores 80).	Information earlier in the report (Section 3.4) describes the gear used in the fishery and states that rock-hopper gear is used in rough bottom areas. The scoring issues for SG60 and 80 are clearly stated (unlikely = 60, highly unlikely = 80). There was no justification for awarding an intermediate score for this PI.
2.4.2	Yes	Yes	NA		
2.4.3	Yes	Yes	NA		



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.5.1	Yes	No	NA	The conclusion that the fishery is "highly unlikely to cause serious or irreversible harm to ecosystem structure and function" is not consistent with the score of 60 for 2.4.1. See my comment above at 2.4.1 and reconsider the text and score and any possible link to Condition 2.	The Ecosystem component of Principle 2 considers the broader ecosystem elements such as trophic structure and function, community composition, and biodiversity. The Habitat component considers the habitats within which the fishery operates. While there are obvious links between the two, they are treated separately within the assessment tree.
2.5.2	No	No	NA	Again the issue of escape mortality should feature.  Bearing in mind the concerns expressed about possible trawling impacts (2.4.1 - score 60) there must be some uncertainties about the efficacy of the current strategy plan. Reconsider the text and lower the score slightly.  See 3.1.4 which may influence the score.	See above comments regarding Habitat and Ecosystem components. The score for PI 2.5.2 is lowered to 90 in order to reflect the uncertainty.
2.5.3	Yes	Yes	NA		



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<b>Performance Indicator</b>	<b>Has all the relevant information available been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	<b>Certification Body Response</b>
3.1.1	Yes	Yes	NA		
3.1.2	Yes	Yes	NA		
3.1.3	Yes	Yes	Yes		



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.1.4	No	No	<p>No</p> <p>Condition 3 covers polar cod, but not other species (target, by-catch, retained and ETP species). It raises the issue of poor regulation of the land all discards rule, but does not propose a solution. The dispensation for polar cod, in my view, potentially undermines the regulation.</p> <p>[NB. This note is in this column rather than the next as I did not seem to have enough space.]</p>	<p>This is (I think) the first (ignoring Condition 3) mention (next in 3.2.3) of the fact that the regulation to land all discards is not adequately monitored by management. This is covered by Condition 3 in relation to polar cod, but elsewhere it seems to have been ignored. On p25 of the Report, 7.2, the text states "...there is no indication of serious violations....". This is repeated in Scoring comments 2.3.1 and 2.3.2</p> <p>The following scoring comments need to be reconsidered in the light of this statement about poor enforcement of the landing of by-catch (scoring comments:- p84, 1.2.3, next to 3rd 80 SG; p95, 2.3.1, 2nd 100 SG; p96, 2.3.2, 1st 80 SG; p98, 2.3.3, 1st 60 SG; p109, 2.5.2, 1st 80 SG).</p> <p>These and other scoring comments, together with the report section, do not seem to adequately address the issue of polar cod catches and discards. Significant catches of polar cod up to 5% of the total catch are now permitted.</p>	<p>Assessment team have argued that by-catch is negligible. However, we have information that shows polar cod cause problems from time to time. The condition was raised in that context, not an overall by-catch issue. In addition to that, the new legislation has just been introduced which recognises the problem with polar cod by-catches and permits discarding of polar cod only if the volume is less than 5% of the total volume in one haul. The client vessels are <u>required</u> to adopt a registration system which can provide clear statistical evidence on the scope of polar cod discards.</p>



## MSC FISHERY ASSESSMENT REPORT

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.2.1	Yes	Yes	Yes		
3.2.2	Yes	Yes	NA		
3.2.3	No	No	No	See 3.1.4.	See 3.1.4
3.2.4	Yes	Yes	NA		
3.2.5	Yes	Yes	NA		

Comments	Certification Body Response
<p>Even if all my suggestions for re-scoring are accepted I would not expect the overall scores for P1, P2 and P3 to be &lt;80. However, if any PI score is reduced to &lt;80 then new Conditions will be generated.</p> <p>I agree with the conclusion to certify the fishery, subject to the improved Conditions I have recommended, and any new ones generated.</p>	<p>The score for PI 2.2.1 is reduced from 100 to 95.  The score for PI 2.2.3 is reduced from 90 to 80.  The score for PI 2.3.1 is reduced from 100 to 95.  The score for PI 2.5.2 is reduced from 95 to 90.  The score for PI 3.2.4 is reduced from 100 to 95.</p> <p><u>Condition 1:</u>  (a) Condition 1 is amended to include an explicit harvest control rule and explicit management plan.</p>



## MSC FISHERY ASSESSMENT REPORT

### ENCLOSURE 8: STAKEHOLDER COMMENTS

#### MSC Review and Report on Compliance with the scheme requirements – Norway North East Arctic cold water prawn fishery.

Comments recd. 20.12.2011.

1.					
Ref	Type	Page	Requirement	Reference	Details
TO.030	Major	47	CR-V1.1-27.12.1.2	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products: The possibility of vessels fishing outside of the unit of certification.	The report does not consider the possibility of vessels fishing outside the unit of certification and the associated risk.

**DNV assessment team comment:**

Inshore fleet target shrimp only in Norwegian waters. Inshore vessels are not equipped to freeze shrimp on board and land all their catches fresh to Norway. There is no possibility that inshore vessel can fish for shrimp outside the unit of certification.

Offshore fleet may fish in both Norwegian (unit of certification) and Russian waters (outside the unit of certification). Almost all Norwegian catches of shrimp take place in the Norwegian waters, catches in Russian EZZ are close to zero. Prawns caught by offshore fleet are processed on board, frozen into blocks and labeled. Catch area are applied on all labels and could be easily identified. All shrimp is processed and labeled before the vessel moves to the next fishing area.

In addition to that, all shrimp catches conducted by Norwegian vessels are documented according to area in the sales note (sluttseddel), which is an official document. See Figure 8.6.4 for an example of a sales note (sluttseddel) issued to a shrimp trawler. Catch area is specified as NØS (Norwegian Economic Zone).

The associated risks are considered to be minimal.



## MSC FISHERY ASSESSMENT REPORT

2.					
TO.031	Major	47	CR-V1.1-27.12.1.3	<p>The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products. The opportunity of substitution of certified with non-certified fish prior or at landing.</p>	<p>The report does not consider any opportunity of substitution of certified and non-certified fish prior or at landing. It is indicated in the report that inshore shrimp boxes do not have labels applied.</p>
<p><b>DNV assessment team comment:</b>                  There is no possibility for substitution of certified with non-certified shrimp prior or at landing. Inshore vessels (small-sized vessels) operate exclusively in NEZ. They have neither capacity nor quota to fish in the REZ. All catches from inshore fleet are landed as fresh/chilled. Large offshore fleet label processed/frozen shrimp at sea and all labels provide information on catch area.</p>					

3.					
TO.032	Major	47,48	CR-V1.1-27.12.1.5	<p>The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products: Any transshipment activities taking place.</p>	<p>The report does not indicate if any transshipment takes place.</p>
<p><b>DNV assessment team comment:</b>                  There is no transshipment in this fishery.</p>					



## MSC FISHERY ASSESSMENT REPORT

4.

TO.038	Major	47	CR-V1.1-27.12.1.6	The CAB shall determine if the systems of tracking and tracing in the fishery are sufficient to make sure all fish and fish products identified and sold as certified by the fishery originate from the certified fishery. The CAB shall consider the following points and their associated risk for the integrity of certified products: The number and/or location of points of landing.	The points of landing are not defined, only that normally the first point of landing is mostly in Norway or Iceland.
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**DNV assessment team comment:**  
It should be noted that all Norwegian shrimp fisheries are undergoing certification process, including all Norwegian vessels permitted to fish for shrimp. Thus, there is no risk of substitution of certified and non-certified catch between Norwegian vessels. They can land their catches along entire Norwegian coast. Landing to processing and peeling factories are defined in section 9.8.4 (See figure 9.8.4)

5.

TO.050	Major	68	CR-V1.1-4.10.1	The official language of the MSC is English.	The client comments are not in English. Peer Reviewer B commented that the text should be in English. Additionally, as per CR 4.10.2, the MSC can request that the text is translated.
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**DNV assessment team comment:**  
Client comments are translated in English.

6.

TO.054	Major	51-53	CR-V1.1-27.11.1.1	The CAB shall ensure that every PI that receives a score of less than 80 has a condition associated with it.	Single conditions are raised against multiple PIs, inconsistent with the need for conditions to achieve the 80 level for each individual PI. MSC's intent with this requirement is that each <80 PI is assigned its own distinct condition.
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**DNV assessment team comment:**  
FCM v. 6.1 para 3.4 does not specify "every PI". This assessment was carried out according to the FAM version 6.1 (scoring, client review and peer review were all before 14.11.2011 and were based on TAB 14 v1.1 & FAM v. 6.1). The requirement for conditions for "every PI" is in the new CR which is valid from 14.11.2011. The two PIs are linked under one condition because it is an either/or situation. The requirement for individual conditions for each PI scoring below 80 will be adhered to in all assessments where the scoring meetings are conducted after 14. 11.2011.



## MSC FISHERY ASSESSMENT REPORT

**7.**

TO.055	Major	116, 118, 144, 145	CR-V1.1-27.10.6.2	The rationale shall make direct reference to every scoring issue and whether or not it is fully met.	Partial scoring was done for PIs 1.2.3, 1.2.4, and 2.5.3, which is not appropriate.
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**DNV assessment team comment:**

There were no partial scoring done for PIs 1.2.3, 1.2.4 and 2.5.3. Y/N are now removed from the scoring table and substituted with definite N to avoid any confusion.  
For PI 2.5.1 we have reduced score from 90 to 80, to ensure consistency in the scoring methodology.

**8.**

TO.057	Major	134	CR-V1.1-27.10.6.1	Rationale shall be presented to support the team's conclusion.	The provided rationales for (1) the second scoring issue of SG60 and (2) the second scoring issue of SG80 do not support that these were met.
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**DNV assessment team comment:**

Rationales for PI 2.4.2 are amended in order to provide better justification and support the score of 80.

**9.**

TO.058	Major	154	CR-V1.1-27.10.6.2	The rationale shall make direct reference to every scoring issue and whether or not it is fully met.	Scoring rationales not provided for SG60 scoring issues.
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**DNV assessment team comment:**

PI 3.2.3 Amended as required.

**10.**

TO.048	Guidance	9	NA		Expected date of certification needs to be changed since the provided date has already passed.
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**DNV assessment team comment:**

Expected date of certification is amended from September 2011 to March 2012.



## MSC FISHERY ASSESSMENT REPORT

11.

TO.052	Guidance	107-157	NA
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The colours used in the scoring table do not match those of the scoring template and are confusing.

**DNV assessment team comment:**

Comment is taken into account. New MSC template would be used for assessments where the scoring meetings were conducted after 14. 11.2011.

12.

TO.053	Guidance	124	NA
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The provided rationale (two yes and two no at the 100 level) seem to mean that the score should be 90, but the stated score is 80.

**DNV assessment team comment:**

The score for PI 2.2.3 is amended from 80 to 90.

## MSC FISHERY ASSESSMENT REPORT

### WWF Comments to the Public Comment Draft Report for the Norwegian North East Arctic Cold Water Prawn fishery.

Comments recd. 29.12.2011.

1.	
MSC Certification Requirements C	Issue
<p><b>2.7.11.1</b> The CAB shall ensure that every PI that receives a score of less than 80 has a condition associated with it.</p>	<p>DNV have only placed one condition on three separate PIs. A condition must be placed separately on each PI, for example:</p> <p>1: A well defined and effective harvest control rules in place for the Barents sea stock by X.</p> <p>2: A management policy that has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach is in place for the Barents sea stock X.</p> <p>3. The Barents sea Shrimp fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2 by X</p>
<p><b>DNV assessment team comment:</b></p> <p>FCM v. 6.1 para 3.4 does not specify "every PI". This assessment was carried out according to the FAM version 6.1 (scoring, client review and peer review were all before 14.11.2011 and were based on TAB 14 v1.1 &amp; FAM v. 6.1). The requirement for conditions for "every PI" is in the new CR which is valid from 14.11.2011. The outcomes for all PI's in this case are the same and this has been a general practice of setting conditions not only by DNV but other CAB'S as well. The requirement for individual conditions for each PI scoring below 80 will be adhered to in all assessments where the scoring meetings are conducted after 14. 11.2011.</p>	

2.	
<p><b>27.11.1.4</b> The CAB shall draft conditions to specify milestones that spell out:</p> <p>a. The measurable improvements and outcomes (using quantitative metrics) <u>expected each year.</u></p> <p>b. The specific timeframes over which the milestones and the whole condition must be met.</p> <p>c. The outcome and score that shall be achieved at any interim milestones.</p> <p><b>27.11.2.5</b> How the CAB will assess outcomes and milestones in each subsequent surveillance or assessment.</p>	<p>DNV has not set any milestones or defined who the outcome will be assessed each surveillance. DNV must set milestones for each year and define how it will be assessed.</p>



## MSC FISHERY ASSESSMENT REPORT

### **DNV assessment team comment:**

This assessment was carried out according to requirements of the FAM version 2. Conditions were set according to FCM version 6.1 and Policy Advisory 17. The requirement for setting of conditions WWF refers to are under the new CR which is valid from 14.11.2011 and is not covering this assessment, conditions for which were set up during spring 2011.

Nevertheless, DNV is of an opinion that both milestones and outcomes are defined as clearly as possible, taking into the account specifics of the conditions being set. Assessment team consulted both authorities, industry and research organization and got assured that work is ongoing in order to improve performance of the fishery to the required by MSC level.

#### Condition 1: Absence of Harvest Control rule

**Milestones:** Client shall demonstrate active support for Harvest control rule proposal at every annual surveillance audit.

**Outcome:** Harvest Control rule is implemented within the timeframe of certification (5 years).  
**NB:** DNV will check the progress both with authorities, research institutes and the client on the annual basis. The timeframe is 5 years, but should DNV found a reason to believe that Outcome is not achievable, it's in the authority of CB to suspend or withdraw the certificate.

#### Condition 2: Impact on sensitive habitats

**Milestones:** Annually monitor results of the MAREANO project and act based on the results in order to reduce impact on sensitive habitats.

**Outcome:** Sufficient quantitative information on distribution of sensitive habitats in the Barents Sea.

**NB:** This is a condition aimed to reduce uncertainty. Progress will be followed up with Research Institutes and client.

#### Condition 3: Discards of by-catch (polar cod)

**Milestones:** Compliance with regulation on discards.

**Outcome:** Compliance with regulation on discards/ Implementation of by-catch registration system for polar cod.

**NB:** The new regulation on by-catch of polar cod has already been implemented by Norwegian authorities. Regulation is set in J-64-2011 and allows shrimp trawlers to discard by-catch of polar cod, when by-catch does not exceed 5% of the total catch taken in one haul. All catches above 5% should be brought onshore.

### 3.

27.11.1.2 The CAB should draft conditions to follow the narrative or metric form of the PISGs used in the final tree.

The conditions do not follow the narrative metric, See examples 1-3 above.

### **DNV assessment team comment:**

See comments of assessment team above, regarding new Certification Requirements.

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## MSC FISHERY ASSESSMENT REPORT

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**4.**

27.11.3.1 Consulting with those entities when setting conditions, if those conditions are likely to require any or all of the following:

- a. Investment of time or money by these entities.
- b. Changes to management arrangements or regulations.
- c. Re-arrangement of research priorities by these entities.

27.11.3.2 Being satisfied that the conditions are both achievable by the client and realistic in the period specified.

It is clear that setting adequate conditions must happen at the stock level, not only the Norwegian level. It is clear that the Russian Federation must be consulted on the achievability of the conditions when defining the consultation. Yet 'ENCLOSURE 1' does not list any Russian consultation.

**DNV assessment team comment:**

Condition regarding Harvest Control Rule for shrimp caught in Norwegian waters is valid for Norway only. Norway takes around 90% of shrimp catches and has a biggest effect on the stock level. Catches of shrimp taken by Russia are zero for the last 3 years. But there are TACs for shrimp in Russian waters. Implementation of Harvest Control rule in Norwegian waters (where almost entire catch of shrimp is taken) is solely the responsibility of Norwegian authorities.

**5.**

27.11.4 If the CAB cannot find evidence to show that funding and/or resources are, or will be, in place to address conditions, certification shall not be awarded.

27.11.5 Where the client and the CAB are unable to agree on the terms of conditions and milestones that will achieve the required increase in the score in question, certification shall not be awarded.

As the peer review one points out "The client considers that the timeframe for implementing an HCR across the whole area might exceed the timeframe of the certificate". This really creates doubts whether resources needed to address the condition are in place and whether there is agreement that this condition can be fulfilled.

**DNV assessment team comment:**

Assessment team consulted both authorities, industry and research organization and got assured that work is ongoing in order to improve performance of the fishery to the required by MSC level and address the condition within the timeframe of the certification. In case of certification, the progress would be followed up at the annual surveillance audits. Surveillance results would be published on [www.msc.org](http://www.msc.org).



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**6.**

CB2.3.1 The team shall make a decision at SG80 if limit reference points set by management are above the level at which there is an appreciable risk of impairing reproductive capacity, and that target reference points are set at a level “consistent with B<sub>MSY</sub>”.

CB2.3.2.1 For the purposes of PI 1.1.2 or pre default tree PI equivalents the team shall interpret reference points as reference points used for managing the fishery— i.e. explicit or implicit points used by management as part of management procedures, management strategies or decision rules to trigger management action.

For the scoring of PI 1.1.2 the reference points referred to are those used by ICES, the scientists. Not those used by managers. Scoring must be based on the reference points used by managers of the Barents Sea stock.

**DNV assessment team comment:**

Norwegian and other coastal states authorities in the North East Atlantic are advised by ICES scientists. Reference points established by ICES scientists are the same as the one used by fisheries authorities in the unit of certification.

**7.**

27.10.6 To contribute to the scoring of any PI, the team shall verify that each scoring issue is fully and unambiguously met.

27.10.6.1 Rationale shall be presented to support the team’s conclusion.

27.10.6.2 The rationale shall make direct reference to every scoring issue and whether or not it is fully met.

PI 1.2.1

Norwegian authorities have not established a TAC (Total Allowable Catch) for the Norwegian North East Arctic cold water prawn fisheries in the Barents Sea (ICES I and II). The absence of a TAC calls for the need of an explicit harvest control rule. There is no official management plan or formalized registration of by-catch in the cold water prawn fisheries either.

No evidence is presented as to how ‘The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference point’.

WWF is concerned about certifying the cold water prawn fisheries in the Barents Sea before a sustainable harvest strategy is in place. A management plan will also have to be established before certifying the fisheries.

This stock is transboundary, no information or evidence is presented on the HCR/Tools of the Russian Federation

**DNV assessment team comment:**

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## MSC FISHERY ASSESSMENT REPORT

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It is correct that the stock is transboundary, but 90% of catches are taken by Norway and in Norwegian waters. Shrimp fishery is a well regulated fishery with a set of measures in place to ensure sustainability. The stock biomass is high and the catches are low. There have been no problems associated with this fishery, thus the establishment of harvest control rule was not a priority. Assessment team consulted both authorities, industry and research organization and got assured that the work is ongoing in order to establish a harvest control rule and improve performance of the fishery to the required by MSC level. In case of certification, the progress would be followed up at the annual surveillance audits. Surveillance results would be published on [www.msc.org](http://www.msc.org).

**8.**

27.10.6 as above  
 27.10.6.1 as above  
 27.10.6.2 as above

This stock is transboundary, no information or evidence is presented on the HCR/Tools of the Russian Federation.

PI 1.2.2

**DNV assessment team comment:**

It is correct that the stock is transboundary, but 90% of catches are taken by Norway and in Norwegian waters. Catches of shrimp by the Russian Federation for the last 3 years were equal to zero. Should the Russian Federation increase catches of shrimp to at least 5%, the impact on the stock would be assessed at the surveillance audits.



**MSC FISHERY ASSESSMENT REPORT**

<p><b>9.</b></p> <p>27.10.6 as above                  27.10.6.1 as above                  27.10.6.2 as above</p> <p>PI 2.4.1</p>	<p>The current knowledge on the impacts of shrimp trawling on sensitive habitats is <u>incomplete</u>. Thus, it is not possible to say, with a high degree of certainty, that the fishery under assessment is highly unlikely to reduce structure and function of sensitive habitats in the Barents Sea to a point where there would be serious or irreversible harm.</p> <p>According to the assessment team, the knowledge of impacts of shrimp trawling on sensitive habitats is incomplete. Both the bottom trawling on soft sea beds and hard bottom habitats described for cold water prawn fishing, are influencing the bottom habitat due to fishing gear making contact with the ocean floor. For hard bottom trawling, rock-hopper gear is used and may be causing highly significant impact in affected areas.</p> <p>The knowledge about the ocean floor and its habitats and diversity is not fully established, and WWF believes the high potential for possible vulnerable habitats to bottom trawling, such as coral and sponges habitats must be evaluated further in order to secure biodiversity.</p>
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**DNV assessment team comment:**

Assessment team shares concerns of WWF regarding impact on the sensitive habitats. That is why it was important to set the condition for certification and give the fishery the chance to improve the performance to MSC requirements.

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## MSC FISHERY ASSESSMENT REPORT

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**10.**

27.10.6 as above  
 27.10.6.1 as above  
 27.10.6.2 as above

PI 3.1.4

According to the assessment team the by-catch is negligible. However there is information showing that problems with for example polar cod can be an issue from time to time. The Marine Resources Act states that all landings of by-catch are mandatory. However, disposal of all non-commercial species are solely the fishermen's cost and responsibility, which again can risk this regulation being undermined in the case of large amounts of by-catch.

The Directorate of Fisheries unfortunately tend to agree with the fishermen on the fact that it is not always reasonable to bring big accidental catches of non-targeted species to shore, and the possibilities for discarding by-catch is always present. WWF calls for this practice coming to an end, and stresses that all by-catch must be landed (if not still alive and healthy). The mandatory regulation is not adequately enforced and monitored, and could affect the ecosystem negatively in the long run.

By-catch of commercial species since 1992 (estimates, Hvingel and Thangstad, 2010):

- Small cod 2-67 million fish/year
- Redfish 2-25 million fish/year
- Haddock 1-9 million fish/year
- Greenland halibut 0.5-14 million fish/year

As the numbers show, there is a great deal of uncertainty regarding by-catch levels. In addition to the commercial species, there is also registered by-catch of non-commercial species such as:

- Anglerfish
- Argentines
- Atlantic halibut
- Atlantic wolffish
- Blue ling
- Common sole
- European hake
- European plaice
- Greater argentine
- Ling
- Long rough dab
- Lump sucker
- Pollock
- Rainbow trout
- Right eye flounders (unspecified)
- Roughhead grenadier
- Roundnose grenadier
- Saithe
- Skates and rays (unspecified)
- Spotted wolffish

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## MSC FISHERY ASSESSMENT REPORT

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	<ul style="list-style-type: none"> <li>• Tusk</li> <li>• Whiting</li> </ul> <p>The overall by-catch is estimated to be between 1-3 percent and below the FAO limit of 8 percent. However there is no available data for possible damages caused by Nordmøre sorting grids on fish and invertebrates, and they may have a significant effect on mortality rate for different species hit by during the activity of trawling.</p> <p>WWF believes this information needs to be adequately used in the assessment and appropriate scores needs to be given</p>	
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**DNV assessment team comment:**

According to assessment team by-catch is negligible. However, there had been a problem with by-catches of polar cod and polar cod only. Industry, authorities and research institutes were aware about this situation with by-catches of polar cod and all parties were determined to find an adequate solution, which can benefit all parties.

The new regulation on by-catch of polar cod is now implemented and enforced by Norwegian authorities. Regulation is set in J-64-2011 and allows shrimp trawlers to discard by-catch of polar cod, when by-catch does not exceed 5% of the total catch taken in one haul. All catches above 5% should be brought onshore. Compliance with regulation would be followed up at annual surveillance audits, should the certification be granted.

Discards are not permitted in the NEZ. According to regulation J-132-2011 §48 following species have to be brought onshore: Greenland halibut, blue ling, Northern wolffish, anglerfish, sprat, tusk, alfonsino (berux), black scabbardfish, sea bream, spotted catfish, smooth head fish, cuttlefish, anchovy, Atlantic wolffish, Blue shark, Grayfish, Sea bass, Horse mackerel, Haddock, Whiting, Onion-eye grenadier, Blue whiting, Ling, Capelin, Pollack, Hake, mackerel, Bluefin tuna, hakeling, orange roughy, polar cod, shrimp, lumpfish, plaice and other flatfish species, sardine, saithe, sandeel, herring, skate, greater forkbeard, rock grenadier, silver scabbardfish, snow crab, strømsild, cod, sole species, redfish, turbot, brill, sailfluke, greater argentine (greater silver smelt), stone bass, Norway pout, eel.

# MSC FISHERY ASSESSMENT REPORT

## ENCLOSURE 9: SCORING TABLE

Scoring worksheet - MSC Fishery Assessment Methodology - Default Assessment Tree - Version 2.1 - 1 May 2009												
Norway North East Arctic cold water prawn fishery												
Note: Scores are to be entered in the green-shaded cells in column K												
Columns G, H and L apply in fisheries where the stock rebuilding PI (1.1.3) is NOT triggered												
Columns I, J and M give the Principle 1 Outcome score contributions in fisheries where the stock rebuilding PI (1.1.3) is triggered												
Principle (L1)	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in		Score	Contribution to Principle Score		
							Either	Or		Either	Or	
One	1	Outcome	0,5	1.1.1	Stock status	0,5	0,25	0,333	0,1667	100	25,00	16,67
				1.1.2	Reference points	0,5	0,25	0,333	0,1667	80	20,00	13,33
				1.1.3	Stock rebuilding					0,333	0,1667	
	Management	0,5	1.2.1	Harvest strategy	0,25	0,125				80	10,00	10,00
			1.2.2	Harvest control rules & tools	0,25	0,125				75	9,38	9,38
			1.2.3	Information & monitoring	0,25	0,125				95	11,88	11,88
			1.2.4	Assessment of stock status	0,25	0,125				95	11,88	11,88
	Two	1	Retained species	0,2	2.1.1	Outcome	0,333	0,0667			100	6,67
2.1.2					Management	0,333	0,0667			100	6,67	6,67
2.1.3					Information	0,333	0,0667			100	6,67	6,67
Bycatch species		0,2	2.2.1	Outcome	0,333	0,0667			95	6,33	6,33	
			2.2.2	Management	0,333	0,0667			100	6,67	6,67	
			2.2.3	Information	0,333	0,0667			90	6,00	6,00	
ETP species		0,2	2.3.1	Outcome	0,333	0,0667			95	6,33	6,33	
			2.3.2	Management	0,333	0,0667			100	6,67	6,67	
			2.3.3	Information	0,333	0,0667			80	5,33	5,33	
Habitats		0,2	2.4.1	Outcome	0,333	0,0667			60	4,00	4,00	
			2.4.2	Management	0,333	0,0667			80	5,33	5,33	
			2.4.3	Information	0,333	0,0667			85	5,67	5,67	
Ecosystem		0,2	2.5.1	Outcome	0,333	0,0667			80	5,33	5,33	
			2.5.2	Management	0,333	0,0667			90	6,00	6,00	
			2.5.3	Information	0,333	0,0667			95	6,33	6,33	
Three	1	Governance and policy	0,5	3.1.1	Legal & customary framework	0,25	0,125			100	12,50	12,50
				3.1.2	Consultation, roles &	0,25	0,125			100	12,50	12,50
				3.1.3	Long term objectives	0,25	0,125			70	8,75	8,75
				3.1.4	Incentives for sustainable fishing	0,25	0,125			75	9,38	9,38
	Fishery specific management system	0,5	3.2.1	Fishery specific objectives	0,2	0,1			70	7,00	7,00	
			3.2.2	Decision making processes	0,2	0,1			95	9,50	9,50	
			3.2.3	Compliance & enforcement	0,2	0,1			75	7,50	7,50	
			3.2.4	Research plan	0,2	0,1			95	9,50	9,50	
			3.2.5	Management performance	0,2	0,1			100	10,00	10,00	
<b>Overall weighted Principle-level scores</b>										Either	Or	
Principle 1 - Target species						Stock rebuilding PI not scored				88,1		
						Stock rebuilding PI scored					73,1	
Principle 2 - Ecosystem										90,0		
Principle 3 - Management										86,6		

## MSC FISHERY ASSESSMENT REPORT

### ENCLOSURE 10: SCORING COMMENT TABLE FOR NORWAY NORTH EAST ARCTIC COLD WATER PRAWN FISHERY

Principle 1		A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.		
1.1 Component		Outcome		Summary Score
1.1.1 PI: Stock status (C1)		The stock is at a level which maintains high productivity and has a low probability of recruitment over-fishing.		100
SG	Scoring Issue	Met Y/N	Comments	Ref
60	It is likely that the stock is above the point where recruitment would be impaired.	Y	The northern shrimp ( <i>Pandalus borealis</i> ) resource in the Barents Sea and in the Svalbard Fishery Protection Zone (ICES Sub-areas I and II) is assessed as a single stock. The most recent stock assessment (October 2010) concluded that biomass has been above $B_{msy}$ throughout the history of the fishery and that, at the end of 2010, was well above $B_{msy}$ . Recruitment indices from surveys indicated that abundance of shrimp from 13 to 16 mm CL (one to two years from the fishery) decreased from 2004 to 2008 but was higher in 2009 and 2010.	NAFO/ICES, 2010; ICES, 2010
80	It is highly likely that the stock is above the point where recruitment would be impaired.	Y	Stock biomass was estimated to be close to carrying capacity (K). The risk of biomass being below $B_{msy}$ at the end of 2010 is 3% and less than 1% of being below $B_{trigger}$ and $B_{lim}$ (see 1.1.2 below).	NAFO/ICES, 2010; ICES, 2010
	The stock is at or fluctuating around its target reference point.	Y	There is no target reference point for the fishery under assessment. However, as the stock biomass appears to be close to carrying capacity, it is clearly above any practicable target reference point.	NAFO/ICES, 2010; ICES, 2010
100	There is a high degree of certainty that the stock is above the point where recruitment would be impaired.	Y	The risk of biomass being below $B_{msy}$ at the end of 2010 is 3% and less than 1% of being below $B_{trigger}$ and $B_{lim}$ (see 1.1.2 below).	NAFO/ICES, 2010; ICES, 2010



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<b>Principle 1</b>	<b>A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>			
<b>1.1 Component</b>	<b>Outcome</b>			<b>Summary Score</b>
<b>1.1.2 PI: Reference points</b>	Limit and target reference points are appropriate for the stock.			<b>80</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	Y	Specific reference points have been established for this stock. (See justification under PI 1.1.2, SG 80).	Hvingel, 2010.
<b>80</b>	Reference points are appropriate for the stock and can be estimated.	Y	The following reference points, consistent with MSY and Precautionary Approaches, have been estimated for this stock: MSY, $B_{trigger}$ , $F_{msy}$ , $B_{lim}$ , and $F_{lim}$ .	NAFO/ICES, 2010; ICES, 2010.
	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.	Y	$B_{lim}$ is set at 30% of $B_{msy}$ (production reduced to 50% MSY); $F_{lim}$ is defined as $1.7F_{msy}$ (the F that drives the stock to $B_{lim}$ ). Both values are relative (i.e. $B/B_{msy}$ and $F/F_{msy}$ ).	ICES, 2010.
	The target reference point is such that the stock is maintained at a level consistent with $B_{msy}$ or some measure or surrogate with similar intent or outcome.	Y	Although there is no explicit target reference point, the risk of falling below both $B_{msy}$ and $B_{trigger}$ is calculated. $B_{trigger}$ is the biomass encountered with low probability if $F_{msy}$ is implemented and is calculated at 50% of $B_{msy}$ (10 <sup>th</sup> percentile of the $B_{msy}$ estimate).	NAFO/ICES, 2010; ICES 2010; Hvingel, 2010.



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	For low trophic level species, the target reference point takes into account the ecological role of the stock.	Y	<p>As indicated above, there is no target reference point, but the stock is estimated to be close to carrying capacity. In this instance the ecological role of shrimp as prey for other species is not a concern.</p> <p>Predation, particularly by cod, is believed to be a major source of mortality for shrimp. Should predation on shrimp increase rapidly outside the range experienced during the 1970– 2008 period, the stock might decrease in size more than expected. Although the Barents sea cod stock is at it's highest observed level and coastal cod has recently shown signs of increase, total predation depends on the abundance of cod, shrimp and also of other prey species. However, investigations to date have not been able to establish a clear predator/prey relationship between cod and shrimp and the likelihood of large reductions in the shrimp stock cannot yet be quantified.</p>	<p>Hvingel, 2010. ICES 2010 (cod) Client meeting. Norwegian Directorate of Fisheries.</p>
100	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of relevant <u>precautionary issues</u> .	N	To achieve a score of 100, consideration of relevant precautionary issues, such as the ecological role of the stock, must include more certainty that the reference points are appropriate than implied under SG80. For this assessment, there was no evidence of a thorough analysis of the stock's ecological role.	Hvingel, 2010. Norwegian Directorate of Fisheries.
	The target reference point is such that the stock is maintained at a level consistent with BMSY or some measure or surrogate with similar intent or outcome, <u>or a higher level</u> , and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.	N	To achieve a score of 100, consideration of relevant precautionary issues, such as the ecological role of the stock, must include more certainty that the reference points are appropriate than implied under SG80. For this assessment, there was no evidence of a thorough analysis of the stock's ecological role.	



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<b>Principle 1</b>		<b>A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>		
<b>1.1 Component</b>		<b>Outcome</b>		<b>Summary Score</b>
<b>1.1.3 PI: Stock rebuilding (C2)</b>		Where the stock is depleted, there is evidence of stock rebuilding.		NA
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	Where stocks are depleted rebuilding strategies which have a <u>reasonable expectation</u> of success are in place.	NA	As indicated in PI 1.1.1, the most recent assessment concluded that the stock biomass has been above $B_{msy}$ throughout the history of the fishery and that, at the end of 2010, was well above $B_{msy}$ . The stock is not depleted; therefore, this performance indicator is not applicable. Nevertheless, the assessment model (See 1.2.4 below) does provide an estimate for rebuilding potential, should the stock decline to $B_{lim}$ . In the absence of fishing, it would take 3 – 10 years to rebuild the stock to $B_{msy}$ .	NAFO/ICES, 2010; ICES, 2010.
	Monitoring is in place to determine whether they are effective in rebuilding the stock within a <u>specified timeframe</u> .	NA		
<b>80</b>	Where stocks are depleted rebuilding strategies are in place.	NA		
	There is <u>evidence</u> that they are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within a <u>specified timeframe</u> .	NA		
<b>100</b>	Where stocks are depleted, strategies are <u>demonstrated</u> to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the <u>shortest practicable timeframe</u> .	NA		



## MSC FISHERY ASSESSMENT REPORT

<b>Principle 1</b>	<b>A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>			
<b>1.2 Component</b>	<b>Management</b>			<b>Summary Score</b>
<b>1.2.1 PI: Harvest strategy</b>	There is a robust and precautionary harvest strategy in place			<b>80</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	The harvest strategy is <u>expected</u> to achieve stock management objectives reflected in the target and limit reference points.	Y	There is no official management plan. However there is an implicit management plan comprising of set of management rules.  The combination of monitoring, stock assessment and management actions, (See 1.2.2 and 1.2.4 below) are expected to achieve management objectives which include an MSY approach advocating caution at low stock size and a Precautionary Approach to avoid impaired recruitment (See 1.1.2 above).	NAFO/ICES, 2010; ICES, 2010.
	The harvest strategy is <u>likely</u> to work based on prior experience or plausible argument.	Y	The efficacy of the harvest strategy is evidenced in the most recent NAFO/ICES stock assessment (October 2010) that concluded the stock biomass has been above Bmsy throughout the history of the fishery and that, at the end of 2010, was well above Bmsy. Current unfavourable economics in this fishery make over-fishing even more unlikely in the foreseeable future.	NAFO/ICES, 2010.  Norwegian Directorate of Fisheries.  Norwegian Ministry of Fisheries and Coastal Affairs  Client Meeting

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	Monitoring is in place that is expected to determine whether the harvest strategy is working.	Y	The Norwegian Directorate of Fisheries monitoring service relies on 150 days of sample trawling to control fishing operations (e.g. regulations, by-catch). A Landing Control System and a delivery note process provide documentation and secure tracking of legal fishing.	Norwegian Directorate of Fisheries. Norwegian Ministry of Fisheries and Coastal Affairs Client Meeting
80	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy <u>work together</u> towards achieving management objectives reflected in the target and limit reference points.	Y	Reference points (See 1.1.2 above), as evaluated in stock assessments, provide guidance for the harvest strategy, ensuring that it is responsive to the state of the stock.  Other elements of the harvest strategy, including monitoring and management actions are complimentary in achieving objectives.	NAFO/ICES, 2010. Norwegian Directorate of Fisheries. Norwegian Ministry of Fisheries and Coastal Affairs
	The harvest strategy may not have been fully tested but monitoring is in place and <u>evidence</u> exists that it is achieving its objectives.	Y	All elements of the harvest strategy have not been fully tested. However, monitoring is in place and the continued healthy state of the stock throughout the history of the fishery provides evidence that its objectives are being achieved.	NAFO/ICES, 2010.
100	The harvest strategy is responsive to the state of the stock and is <u>designed</u> to achieve stock management objectives reflected in the target and limit reference points.	N	There is an implicit harvest strategy, but no formal management objectives have been defined.	Norwegian Directorate of Fisheries.
	The performance of the harvest strategy has been <u>fully evaluated</u> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.	N		Norwegian Ministry of Fisheries and Coastal Affairs
	The harvest strategy is <u>periodically reviewed and improved</u> as necessary.	N		Norwegian Ministry of Fisheries and Coastal Affairs

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<b>Principle 1</b>		<b>A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>		
<b>1.2 Component</b>		<b>Management</b>		<b>Summary Score</b>
<b>1.2.2 PI: Harvest control rules and tools</b>		There are well defined and effective harvest control rules in place		<b>75</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	Generally understood harvest control rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.	Y	Norway does not impose a formal harvest control rule for this fishery; rather, the fishery is regulated through a licensing system for Norwegian vessels in the Norwegian EEZ in the Barents Sea area and a restrictive non-discriminatory policy regarding number of fishing days and vessels for all fleets in the Svalbard Fishery Protection Zone (SFPZ). A partial TAC of approx. 2000 tones is applied to Norwegian vessels fishing in the Russian EEZ. Minimum mesh size is regulated at 35 mm. Another rule provides for area closures when small shrimp (< 15mm CL) or other small fish (red fish, Greenland halibut, cod and haddock) are encountered. By catch of fish is minimized by the mandatory use of sorting grids with 22 mm bar spacing.	NAFO/ICES, 2010. Norwegian Directorate of Fisheries. Norwegian Ministry of Fisheries and Coastal Affairs Client Meeting
	There is <u>some evidence</u> that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.	Y	The continued healthy state of the stock throughout the history of the fishery provides evidence that management tools are appropriate and effective in controlling exploitation.	NAFO/ICES, 2010.
<b>80</b>	<u>Well defined</u> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.	N	Although management tools are well defined, and consistent with the harvest strategy, there is no formal harvest control rule for this fishery. <b>CONDITION 1</b>	Norwegian Directorate of Fisheries.

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	The <u>selection</u> of the harvest control rules takes into account the <u>main</u> uncertainties.	Y	Development of management tools was based on practical experience of performance and evidence of performance over the history of the fishery thereby taking main uncertainties into account.	Norwegian Ministry of Fisheries and Coastal Affairs
	<u>Available evidence indicates</u> that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	Y	The continued healthy state of the stock throughout the history of the fishery provides evidence that tools are appropriate and effective in controlling exploitation.	
<b>100</b>	The <u>design</u> of the harvest control rules take into account a <u>wide</u> range of uncertainties.	N	Although management tools are well defined, and consistent with the harvest strategy, there is no formal harvest control rule for this fishery.	
	<u>Evidence clearly shows</u> that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.	N		



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<b>Principle 1</b>	<b>A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>			
<b>1.2 Component</b>	<b>Management</b>			<b>Summary Score</b>
<b>1.2.3 PI: Information and monitoring</b>	Relevant information is collected to support the harvest strategy			<b>95</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	<u>Some</u> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Y	Information from surveys and the fishery related to stock structure, stock productivity and fleet composition is used regularly in the assessment of stock status relative to reference points and evaluation of risk. The Norwegian Directorate of Fisheries collects catch information from the sales organisations that are required by regulation to report all sales figures.	NAFO/ICES, 2010; ICES 2010; Hvingel, 2010.  Norwegian Directorate of Fisheries.  Client Meeting
	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Y	Annual assessments provide guidance for management tools and data requirements for the assessment model ensure that stock abundance and catch are appropriately monitored.  Fishing position, catch and activity are reported electronically (log-book data for vessels larger than 15 m) to the Norwegian Directorate of Fisheries on daily basis. Inshore vessels maintain daily log-books for inspection. Landing information for all vessels is obtained from sales notes.	NAFO/ICES, 2010; ICES 2010; Hvingel, 2010.  Norwegian Directorate of Fisheries.  Client Meeting
<b>80</b>	<u>Sufficient</u> relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	Y	The information used in the assessments (see PI 1.2.3, SG 60) is extensive and appropriate for the assessment model used.	NAFO/ICES, 2010.

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	Stock abundance and fishery removals are <u>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</u> , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	Y	Annual assessments support the management tools and ensure that stock abundance and catch are regularly monitored. The information that provides input for the assessment model is considered accurate and spatially representative. Reporting requirements of the Fisheries Directorate ensure the provision of timely fishery information. Sales organizations also provide surveillance activities through control of landings and minimum sizes of shrimp.	Hvingel, 2010; Hvingel and Thangstad, 2010;
	There is good information on all other fishery removals from the stock.	Y	There is no other fishery that retains this species as by-catch.  Discarding of shrimp within the shrimp fishery cannot be quantified, but is believed to be negligible because discarding is illegal.	Norwegian Directorate of Fisheries. Havressurslova (2008) Client Meeting
<b>100</b>	A <u>comprehensive range</u> of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly relevant to the current harvest strategy, is available.	Y	The information base is considered comprehensive and includes surveys, fishery removals, fleet composition, model results and projections, as well as information on the physical and biological environment.	NAFO/ICES, 2010; ICES 2010.
	<u>All information</u> required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent <u>uncertainties in the information [data]</u> and the robustness of assessment and management to this uncertainty.	N	There is no additional information available which is relevant to a wider set of possible stock hypothesis than addressed by the current management tools.  The assessment model addresses uncertainties, thereby justifying score of 95.	Hvingel, 2010;

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<b>Principle 1</b>	<b>A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.</b>		
<b>1.2 Component</b>	<b>Management</b>		<b>Summary Score</b>
<b>1.2.4 PI: Assessment of stock status</b>	There is an adequate assessment of the stock status		<b>95</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>
<b>60</b>	The assessment estimates stock status relative to reference points.	Y	The assessment model is a Bayesian version of a surplus-production model. Inputs include two survey indices and a commercial CPUE index. The CPUE is standardized to account for changes in fishing operations (e.g. fewer and larger vessels, double and triple trawling) that have occurred since the mid 1990s and provides an index of the fishable biomass of older male and female shrimp (> 16mm CL).  MSY, $B_{trigger}$ , $F_{msy}$ , $B_{lim}$ , and $F_{lim}$ have been established and the model evaluates the stock against these reference points. Risks of falling below $B_{lim}$ , $B_{trigger}$ , and $B_{msy}$ are calculated for catch options ranging from 30,000 to 90,000 tons. Risk of exceeding $F_{msy}$ and $1.7F_{msy}$ are derived similarly.
	The major sources of uncertainty are identified.	Y	Though the major sources of uncertainty are identified, the large and sudden changes in recruitment may not be fully captured in model predictions. Also, should predation on shrimp increase rapidly, outside the historical range, the stock could decrease more than the model results indicate.
<b>80</b>	The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points.	Y	The model was designed for shrimp and the outputs evaluate the risks in violating reference points which are based on MSY and Precautionary approaches. Although measures of stock status are relative ( $B/B_{msy}$ , $F/F_{msy}$ ) rather than absolute, the assessment is considered indicative of stock trends.
	The assessment takes uncertainty into account.	Y	Risk of exceeding or falling below reference points over a range of catch options addresses additional uncertainty.
			Ref
			Hvingel, 2010; NAFO/ICES, 2010; ICES 2010.
			ICES 2010.
			Hvingel, 2010; ICES 2010.



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	The stock assessment is subject to peer review.	Y	The stock is assessed annually by NAFO/ICES.	NAFO/ICES 2010.
<b>100</b>	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.	Y	In addition to model output, the assessment considers shrimp as prey for other species and the affects of changes in temperature on distribution. Attempts at including cod predation as an effect in the model have not been successful because the relationship between shrimp and cod densities has not been established. Changes in bottom temperature have been used to infer changes in shrimp distribution between years.	ICES 2010.
	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.	Y	The evaluation of risk ensures that the stock is being evaluated relative to reference points in a probabilistic way.	Hvingel, 2010.
	The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.	Y	The model describes trends in stock development and is considered robust in its response to year-to year changes. It generated reasonable simulations of the observed data and the retrospective pattern of the relative biomass series did not reveal sensitivity problems with respect to particular years.  The model was developed as an alternative to other assessment approaches for shrimp which relied on biological information, research survey and fishery data that were interpreted generally or incorporated in the multiple-indicator, traffic light methodology.	ICES 2010; Hvingel 2010. NAFO/ICES 2010.
	The assessment has been <u>internally and externally</u> peer reviewed.	N	The assessment is reviewed internally but has not been subjected to external peer review.	

## MSC FISHERY ASSESSMENT REPORT

Principle 2		Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.		
2.1 Component		Retained species		Summary Score
2.1.1 PI: Outcome Status		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species.		100
SG	Scoring Issue	Met Y/N	Comments	Ref
60	Main retained species are <u>likely</u> to be within biologically based limits or if outside the limits there are <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.	NA	The MSC Fisheries Assessment Methodology (FAM v2.1, 2010) defines retained species as “those parts of the retained catch that are not covered under Principle 1 because they are not included in the Unit of Certification. However the retained catch can still be a valuable catch in the fishery, whether it is targeted or taken incidentally, and there is thus an economic incentive for capture.”  License holders or operators do not retain other species for commercial purposes. Regulations require that by-catch be “retained” and landed for monitoring, but not for its value. Furthermore, there is limited information from the landed by-catch and some species are exempt from the regulation. The assessment team agreed that the issue of incidental catches in the shrimp fishery is best handled under component 2.2 by-catch.	Norwegian Directorate of Fisheries.  Client Meeting
	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.	NA		
80	Main retained species are <u>highly likely</u> to be within biologically based limits, or if outside the limits there is a <u>partial strategy</u> of <u>demonstrably effective</u> management measures in place such that the fishery does not hinder recovery and rebuilding.	NA		
100	There is a <u>high degree of certainty</u> that retained species are within biologically based limits.	NA	There are no retained species as defined by the MSC and the regulation to land (or retain) other species in this fishery is more appropriately addressed under by-catch (2.2 below). Consequently, there are no issues for this fishery related to retained species other than shrimp which is covered under Principle 1. As stated in the FAM (Section 7.2.3): “If there are no Principle 2 retained species in the fishery, or retention is exceptionally rare and negligible in its impact, then the fishery would meet SG100.”	Norwegian Directorate of Fisheries.  Client Meeting
	Target reference points are defined and retained species are at or fluctuating around their target reference points.	NA		

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Principle 2		Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.		
2.1 Component		Retained species		Summary Score
2.1.2 PI: Management strategy		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.		100
SG	Scoring Issue	Met Y/N	Comments	Ref
60	There are <u>measures</u> in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	NA	The MSC Fisheries Assessment Methodology (FAM v2.1, 2010) defines retained species as “those parts of the retained catch that are not covered under Principle 1 because they are not included in the Unit of Certification. However the retained catch can still be a valuable catch in the fishery, whether it is targeted or taken incidentally, and there is thus an economic incentive for capture.”  License holders or operators do not retain other species for commercial purposes. Regulations require that by-catch be “retained” and landed for monitoring, but not for its value. Furthermore, there is limited information from the landed by-catch and some species are exempt from the regulation. The assessment team agreed that the issue of incidental catches in the shrimp fishery is best handled under component 2.2 by-catch.	Norwegian Directorate of Fisheries.  Client Meeting
	The measures are considered <u>likely</u> to work, based on plausible argument (eg, general experience, theory or comparison with similar fisheries/species).	NA		
80	There is a <u>partial strategy</u> in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	NA		
	There is some <u>objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or species involved.	NA		
	There is <u>some evidence</u> that the partial strategy is being <u>implemented successfully</u> .	NA		
100	There is a <u>strategy</u> in place for managing retained species.	NA	There are no retained species as defined by the MSC and the regulation to land (or retain) other species in this fishery is more appropriately addressed under by-catch (2.2 below). Consequently, there are no issues for this fishery related to retained species other than shrimp which is covered under Principle 1. As stated in the FAM (Section 7.2.3): “If there are no Principle 2 retained species in the fishery, or retention is exceptionally rare and negligible in its impact, then the fishery would meet SG100.”	Norwegian Directorate of Fisheries.  Client Meeting
	The strategy is mainly based on information directly about the fishery and/or species involved, and <u>testing</u> supports <u>high confidence</u> that the strategy will work.	NA		
	There is <u>clear evidence</u> that the strategy is being <u>implemented successfully</u> , and intended changes are occurring.	NA		
	There is some evidence that the strategy is <u>achieving its overall objective</u> .	NA		

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Principle 2		Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.		
2.1 Component		Retained species		Summary Score
2.1.3 PI: Information and monitoring		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species.		100
SG	Scoring Issue	Met Y/N	Comments	Ref
60	Qualitative information is available on the amount of main retained species taken by the fishery.	Y	The MSC Fisheries Assessment Methodology (FAM v2.1, 2010) defines retained species as “those parts of the retained catch that are not covered under Principle 1 because they are not included in the Unit of Certification. However the retained catch can still be a valuable catch in the fishery, whether it is targeted or taken incidentally, and there is thus an economic incentive for capture.”  License holders or operators do not retain other species for commercial purposes. Regulations require that by-catch be “retained” and landed for monitoring, but not for its value. Furthermore, there is limited information from the landed by-catch and some species are exempt from the regulation. The assessment team agreed that the issue of incidental catches in the shrimp fishery is best handled under component 2.2 by-catch.	Norwegian Directorate of Fisheries.  Client Meeting
	Information is <u>adequate</u> to <u>qualitatively</u> assess outcome status with respect to biologically based limits.	Y		
	Information is adequate to support <u>measures</u> to manage <u>main</u> retained species.	Y		
80	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Y		
	Information is <u>sufficient</u> to estimate outcome status with respect to biologically based limits.	Y		
	Information is adequate to support a <u>partial strategy</u> to manage <u>main</u> retained species.	Y		
	Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).	Y		
100	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.	Y	There are no retained species as defined by the MSC and the regulation to land (or retain) other species in this fishery is more appropriately addressed under by-catch (2.2 below). Consequently, there are no issues for this fishery related to retained species other than shrimp which is covered under Principle 1. As stated in the FAM (Section 7.2.3): “If there are no Principle 2 retained species in the fishery, or retention is exceptionally rare and negligible in its impact, then the fishery would meet SG100.”	Norwegian Directorate of Fisheries.  Client Meeting
	Information is <u>sufficient</u> to <u>quantitatively</u> estimate outcome status with a <u>high degree of certainty</u> .	Y		
	Information is adequate to support a <u>comprehensive strategy</u> to manage retained species, and evaluate with a <u>high degree of certainty</u> whether the strategy is achieving its objective.	Y		
	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.	Y		

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Principle 2		Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.		
2.2 Component		By-catch		Summary Score
2.2. 1 PI: Outcome status		The fishery does not pose a risk of serious or irreversible harm to the by-catch species or species groups and does not hinder recovery of depleted by-catch species or species groups.		95
SG	Scoring Issue	Met Y/N	Comments	Ref
60	Main by-catch species are <u>likely</u> to be within biologically based limits, or if outside such limits there are mitigation <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding.	Y	As all vessels are required by law to use sorting grates (22mm spacing), by-catch is minimal and likely less than 1% per species. Therefore, as defined by the FAM, by-catch being below 5% of total catch, there are no main by-catch species. The minor by-catch species include juvenile cod, redfish, haddock and Greenland halibut, as well as polar cod and capelin (See list in Section 7.1 above). Area closures also ensure that by-catch is low.	Hvingel and Thangstad, 2010. IMR.
	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the by-catch species to be outside biologically based limits or hindering recovery.	Y		Vold and Engås, 1997.
80	Main by-catch species are <u>highly likely</u> to be within biologically based limits or if outside such limits there is a <u>partial strategy</u> of <u>demonstrably effective</u> mitigation measures in place such that the fishery does not hinder recovery and rebuilding.	Y	The shrimp fishery is relatively small with recent annual catches of around 20.000 t and a by-catch of less than 1% per by-catch species. A score of 100 is justified by the negligible impact of the fishery on by-catch species. Fishing mortality for by-catch species is considered insignificant and close to zero.	
100	There is a <u>high degree</u> of certainty that by-catch species are within biologically based limits.	Y	Studies on the survival of various fish species that escape the trawl via the sorting grid have shown some damage with respect to visible skin injuries and scale loss. However, with respect to escape mortality, no firm conclusions have been reached. Though, even if bycatch in the fishery is considered negligible, the fate of those escaping the trawl is uncertain, suggesting a lower score (95) is appropriate.	

## MSC FISHERY ASSESSMENT REPORT

Principle 2		Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.		
2.2 Component		By-catch		Summary Score
2.2.2 PI: Management strategy		There is a strategy in place for managing by-catch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to by-catch populations.		100
SG	Scoring Issue	Met Y/N	Comments	Ref
60	There are <u>measures</u> in place, if necessary, which are expected to maintain main by-catch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.	Y	As all vessels are required by law to use sorting grates (22mm spacing), by-catch is minimal and likely less than 1% per species. Therefore, as defined by the FAM, by-catch being below 5% of total catch, there are no main by-catch species. Regulated area closures further ensure that by-catch is low. These measures constitute a strategy for managing by-catch which has proven to be effective.  A score of 100 is justified. The strategy for managing and minimizing by-catch was designed specifically for this fishery and the low by-catch provides evidence that the strategy works. The impact of the fishery on by-catch species is negligible. Fishing mortality for by-catch species is considered to be insignificant and close to zero.	NAFO/ICES 2010;
	The measures are considered <u>likely</u> to work, based on plausible argument (e.g general experience, theory or comparison with similar fisheries/species).	Y		
80	There is a <u>partial strategy</u> in place, if necessary, for managing by-catch that is expected to maintain main by-catch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.	Y		
	There is <u>some objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or the species involved.	Y		
	There is <u>some evidence</u> that the partial strategy is being implemented successfully.	Y		
100	There is a <u>strategy</u> in place for managing and minimising by-catch.	Y		
	The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports <u>high confidence</u> that the strategy will work.	Y		
	There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.	Y		



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Principle 2		Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.		
2.2 Component		By-catch		Summary Score
2.2.3 PI: Information and monitoring		Information on the nature and amount of by-catch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage by-catch.		90
SG	Scoring Issue	Met Y/N	Comments	Ref
60	<u>Qualitative information</u> is available on the amount of main by-catch species affected by the fishery.	Y	As all vessels are required by law to use sorting grates (22mm spacing), by-catch is minimal and likely less than 1% per species. Therefore, as defined by the FAM, by-catch being below 5% of total catch, there are no main by-catch species. Regulated area closures further ensure that by-catch is low. There are no accurate and verifiable data on by-catches which are being below 5% of total shrimp catches.	NAFO/ICES 2010;
	Information is <u>adequate to broadly understand</u> outcome status with respect to biologically based limits.	Y		
	Information is adequate to support <u>measures</u> to manage by-catch.	Y		
80	<u>Qualitative information and some quantitative information</u> are available on the amount of main by-catch species affected by the fishery.	Y		
	Information is sufficient to estimate outcome status with respect to biologically based limits.	Y		
	Information is adequate to support a <u>partial strategy</u> to manage main by-catch species.	Y		
	Sufficient data continue to be collected to detect any increase in risk to main by-catch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).	Y		
100	<u>Accurate and verifiable information</u> is available on the amount of all by-catch and the consequences for the status of affected populations.	N	It is considered that by-catch of other species in shrimp fishery is insignificant and close to zero, but information is insufficient to quantitatively estimate outcome status. Furthermore, quantitative information on the fate of species escaping through the sorting grates is lacking.	
	Information is <u>sufficient</u> to quantitatively estimate outcome status with respect to biologically based limits with a <u>high degree of certainty</u> .	N		



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	Information is adequate to support a <u>comprehensive strategy</u> to manage by-catch, and evaluate with a high degree of certainty whether the strategy is achieving its objective.	Y	Information from the fishery and from surveys is supportive of the mandatory use of sorting grates and the implementation of closed areas, enforced by the Norwegian Coast Guard. These measures constitute a comprehensive strategy designed to manage by-catch. The estimated low by-catch level, based on reliable information, is testament to the strategy achieving its objective.	
	Monitoring of by-catch data is conducted in sufficient detail to assess ongoing mortalities to all by-catch species.	Y	Based on the low levels of by-catch observed in the fishery, and the regular review of by-catch during the NAFO/ICES assessments, the fishing mortality on all species is considered to be close to zero and negligible.	



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<b>Principle 2</b>		<b>Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.</b>		
<b>2.3 Component</b>		<b>ETP species</b>		<b>Summary Score</b>
<b>2.3.1 PI: Outcome Status</b>		The fishery meets national and international requirements for protection of ETP species. The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species.		<b>95</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	Known effects of the fishery are <u>likely</u> to be within limits of national and international requirements for protection of ETP species.	Y	The ETP species on the 2010 Norwegian Red List relevant to this fishery are redfish ( <i>Sebastes marinus</i> and <i>S. mentella</i> ), blue ling ( <i>Molva dypterygia</i> ) and pollock ( <i>Theragra finnmarchica</i> ). Several skates and rays are also listed but only the spiny tail skate ( <i>Bathyraja spinicauda</i> ) occurs in the Barents Sea survey area (IMR unpublished) and might occur as by-catch.  The by-catch of redfish is limited to 3 fish per 10 kg of shrimp and, should this limit be exceeded, vessels are required to move to another area. According to client, the only by-catch species of redfish taken in the unit of certification is deep-water redfish ( <i>Sebastes Mantella</i> ), which stock is in a relatively better state than <i>Sebastes Marinus</i> stock.  There are no by-catch limits for the other listed species. Generally,	Client meeting IMR ICES, 2010
	Known direct effects are <u>unlikely</u> to create <u>unacceptable impacts</u> to ETP species.	Y		
<b>80</b>	The effects of the fishery are known and are <u>highly likely</u> to be within limits of national and international requirements for protection of ETP species.	Y		
	Direct effects are <u>highly unlikely</u> to create <u>unacceptable impacts</u> to ETP species.	Y		
	Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	Y		
<b>100</b>	There is a <u>high degree of certainty</u> that the effects of the fishery are within limits of national and international requirements for protection of ETP species.	Y		



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	<p>There is a <u>high degree of confidence</u> that there are <u>no significant detrimental effects (direct and indirect)</u> of the fishery on ETP species.</p>	Y	<p>the sorting grate ensures that the by-catch is minimal for all species. Also, large areas in the northeast part of the Norwegian EEZ have remained closed due to high encounters with redfish.</p> <p>The mandatory use of sorting grates and the implementation of permanent and temporary closed areas as necessary are effective for minimizing the by-catch of all species. Furthermore, discarding is prohibited and there is a requirement for by-catch to be landed. These controls are enforced by the Norwegian Coast Guard and there is no indication of serious fishery violations.</p> <p>This fishery is considered to be relatively small (recent catches of around 20.000 t) and by-catches have been estimated (quantitatively) to be less than 1% per species. It has been demonstrated that the fishery has little effect on all by-catch species and the related fishing mortality is negligible and close to zero. ICES (2010) concluded that, overall, by-catch is relatively small due to the sorting grates and area closures.</p> <p>However, quantitative information on the fate of species escaping through the sorting grates is lacking. Therefore a score of 95 is justified.</p>	
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Principle 2		Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.		
2.3 Component		ETP species		Summary Score
2.3.2 PI: Management strategy		The fishery has in place precautionary management strategies designed to: <ul style="list-style-type: none"> <li>- meet national and international requirements;</li> <li>- ensure the fishery does not pose a risk of serious or irreversible harm to ETP species;</li> <li>- ensure the fishery does not hinder recovery of ETP species; and</li> <li>- minimise mortality of ETP species.</li> </ul>		100
SG	Scoring Issue	Met Y/N	Comments	Ref
60	There are <u>measures</u> in place that minimise mortality, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	Y	Redfish by-catch is limited to 3 fish per 10 kg of shrimp and, if this limit is exceeded, a vessel is required to move to another area. The sorting grate ensures that the by-catch is minimal. Large areas in the Northeast part of the Norwegian EEZ have remained closed due to high encounters with redfish. There are no by-catch limits for the other listed species.	Fisheries Directorate Client meeting
	The measures are <u>considered likely</u> to work, based on <u>plausible argument</u> (eg general experience, theory or comparison with similar fisheries/species).	Y	The low level of by-catch for all species indicates that these measures work to minimize redfish by-catch.	
80	There is a <u>strategy</u> in place for managing the fishery's impact on ETP species, including measures to minimise mortality, that is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	Y	The mandatory use of sorting grates and the implementation of closed areas as necessary are effective for minimizing the by-catch of ETP species. Furthermore, discarding is prohibited and there is a requirement for by-catch to be landed. These controls are enforced by the Norwegian Coast Guard.	
	There is an <u>objective basis for confidence</u> that the strategy will work, based on <u>some information</u> directly about the fishery and/or the species involved.	Y	The low levels of removals for ETP species, as calculated from fishery and research data (See Section 7.1) provides an objective basis for confidence that the strategy works.	



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	There is <u>evidence</u> that the strategy is being implemented successfully.	Y	Use of sorting grates is mandatory. Permanent and temporary area closures are enforced by the Norwegian Coast Guard.	
<b>100</b>	There is a <u>comprehensive strategy</u> in place for managing the fishery's impact on ETP species, including measures to minimise mortality, that is designed to achieve <u>above</u> national and international requirements for the protection of ETP species.	Y	The mandatory use of sorting grates and the implementation of closed areas as necessary are considered to be an effective and comprehensive strategy for managing and minimizing catch of ETP species.	
	The strategy is mainly based on information directly about the fishery and/or species involved, and a <u>quantitative analysis</u> supports <u>high confidence</u> that the strategy will work.	Y	Removals are estimated quantitatively and the low removals of ETP species provide evidence that the strategy (sorting grates, area closures and Coast Guard enforcement) is working.	
	There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is evidence that the strategy is achieving its objective.	Y	Elements of the strategy are mandated by law and there is no evidence of serious fishery violations. The low removals of ETP species, estimated to be less than 1% per species, provide evidence that the strategy is achieving its objective.	



## MSC FISHERY ASSESSMENT REPORT

Principle 2		Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.		
2.3 Component		ETP species		Summary Score
2.3.3 PI: Information and monitoring		Relevant information is collected to support the management of fishery impacts on ETP species, including: <ul style="list-style-type: none"> <li>- information for the development of the management strategy;</li> <li>- information to assess the effectiveness of the management strategy; and</li> <li>- information to determine the outcome status of ETP species.</li> </ul>		80
SG	Scoring Issue	Met Y/N	Comments	Ref
60	Information is <u>adequate</u> to <u>broadly understand</u> the impact of the fishery on ETP species.	Y	Discarding is illegal and by-catch of ETP species is required to be landed.  The low level of by-catch of all species provides evidence that the shrimp fishery does not have a deleterious effect on these species.	Norwegian Fisheries Directorate  Client meeting
	Information is adequate to support <u>measures</u> to manage the impacts on ETP species	Y	Information on the occurrence of ETP species in shrimp fishery and the requirement that all by-catch be landed are supportive of measures to manage the impacts on ETP species.	
	<u>Information</u> is sufficient to <u>qualitatively</u> estimate the fishery related mortality of ETP species.	Y	By-catch is estimated as described in Section 7.1 above.	
80	Information is <u>sufficient</u> to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a <u>full strategy</u> to manage impacts.	Y	Information from the fishery and from surveys is supportive of the mandatory use of sorting grates and the implementation of closed areas, enforced by the Norwegian Coast Guard. These measures are considered to represent a full strategy designed to manage ETP bycatch.	



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	Sufficient data are available to allow fishery related mortality and the impact of fishing to be <u>quantitatively</u> estimated for ETP species	Y	Based on the low levels of ETP by-catch observed in the fishery (less than 1% per species), the fishing mortality on these species is considered to be negligible and close to zero  Because skates and rays are not identified at the species level from the fishery, it is possible that the Red Listed spiny tail skate ( <i>Bathyraja spinicauda</i> ) occurs as by-catch. However, as the by-catch of the group is low, that of any one species within the group would be even lower and insignificant.	
100	Information is <u>sufficient</u> to <u>quantitatively</u> estimate outcome status with a high degree of certainty.	N	Information is insufficient to quantitatively estimate outcome status for <u>all</u> by-catch species and verify magnitude of <u>all</u> mortalities and injuries occurred in the fishery under assessment.	
	Information is adequate to support a <u>comprehensive strategy</u> to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.	N		
	<u>Accurate and verifiable information</u> is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.	N		



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<b>Principle 2</b>		<b>Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.</b>		
<b>2.4 Component</b>		<b>Habitat</b>		<b>Summary Score</b>
<b>2.4.1 PI: Outcome Status</b>		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.		<b>60</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	The fishery is <u>unlikely</u> to reduce habitat structure and function to a point where there would be serious or irreversible harm.	Y	<p>Shrimp trawling is generally believed to cause negligible damage to habitat structure and function. Modern trawls are relatively light with minimal contact with the substrate. Trawl doors, when in contact with the ocean floor, causes some scouring. The use of bobbins and rock-hopper gear within 12 nautical miles from coastline is prohibited in this area.</p> <p>Several studies on the impacts of shrimp trawling on soft ocean substrate failed to detect any clear and consistent effects attributable to trawling.</p> <p>The Barents Sea has a muddy, mobile habitat. The study of experimental trawling in this region is believed to show that trawling affects the benthic assemblage mainly through relocation of shallow burrowing in faunal species to the surface of the seafloor and the re-suspension of surface sediment.</p>	Lokkeborg, 2005. Stiansen et al. (2006);

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80	The fishery is <u>highly unlikely</u> to reduce habitat structure and function to a point where there would be serious or irreversible harm.	N	<p>The Integrated Management Plan for the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands was presented by the Norwegian Government in 2006. The MAREANO project is coordinated by the Institute of Marine Research, the Geological Survey of Norway and the Norwegian Hydrographic Service. The project is financed by contributions from the National Budget through the Ministry of fisheries and Coastal Affairs, the Ministry of Environment and the Ministry of Trade and Industry. The project is expected to fill in the knowledge gaps related to seabed conditions and biodiversity defined in the Integrated Management Plan.</p> <p><b>CONDITION 2</b></p>	www.mareano.no
100	There is <u>evidence</u> that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	Y/N	<p>A recent analysis (IMR, unpublished) compared the area trawled by the fishery with the known area of shrimp distribution in Barents Sea. Shrimp habitat was estimated to be approximately 850,000 km<sup>2</sup> and the area fished, about 15,000 km<sup>2</sup>, or 1.74%. This analysis provides some <u>evidence</u> that the fishery is highly unlikely to cause serious or irreversible harm to habitat.</p> <p>Main impacts on habitat for the Gulf of St. Lawrence shrimp fishery have been evaluated qualitatively and, in part, quantitatively. It was concluded that, the area affected was relatively small, minimizing any negative habitat effects (Devitt, et al., 2008).</p> <p>Although knowledge on the impacts of shrimp trawling is incomplete, based on available evidence it appears highly unlikely that the fishery would reduce habitat structure and function to a point where there would be serious or irreversible harm.</p>	Devitt, et al., 2008

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<b>Principle 2</b>		<b>Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.</b>		
<b>2.4 Component</b>		<b>Habitat</b>		<b>Summary Score</b>
<b>2.4.2 PI: Management strategy</b>		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.		<b>80</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	There are <u>measures</u> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	Y	Shrimp trawling near coral reefs is prohibited by regulation and several reefs are protected as marine protected areas <sup>43</sup> .	Norwegian Directorate of Fisheries, 2009
	The measures are considered <u>likely</u> to work, based on plausible argument (e.g general experience, theory or comparison with similar fisheries/habitats).	Y	Fishing is not permitted in marine protected areas and the rigorous enforcement by Norwegian authorities provide a clear evidence that the measures are implemented and work in order to protect sensitive habitats.  An ongoing research programme (MAREANO) continues to map the distribution of sensitive habitats and monitors fishery effects on or interactions with them.	Norwegian Directorate of Fisheries.  Client Meeting
<b>80</b>	There is a <u>partial strategy</u> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	Y	The establishment of marine protected areas constitutes a partial strategy. Section 19 of the Marine Resources Act states that habitats that are deemed to require protection can be permanently closed on short notice.	Havressurslova (Marine Resources Act ), 2008

<sup>43</sup> [fiskeridir.no/fiskeridir/english/resource-management/marine-protected-areas](http://fiskeridir.no/fiskeridir/english/resource-management/marine-protected-areas).

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	There is some <u>objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or habitats involved.	Y	<p>As the fishery is not permitted to operate in marine protected areas Norwegian Directorate of Fisheries.</p> <p>Client Meeting and all those areas are rigorously enforced by Norwegian authorities in order to ensure zero impact on habitats within these areas, there is a clear sign that a partial strategy is achieving its goal and working.</p> <p>To support protection of marine habitats, an on-going research programme (MAREANO) continues to map the distribution of sensitive habitats and monitors fishery effects on or interactions with them.</p> <p>The results from MAREANO are submitted to Norwegian authorities on continues basis and support the national strategy for protection of sensitive habitats.</p>	<p>Norwegian Directorate of Fisheries.</p> <p>Client Meeting</p>
	There is <u>some evidence</u> that the partial strategy is being implemented successfully.	Y	<p>Marine protected areas and those deemed to require closure on short notice are established by law and enforced.</p>	<p>Norwegian Directorate of Fisheries.</p> <p>Coast Guard (report 2010).</p>
<b>100</b>	There is a <u>strategy</u> in place for managing the impact of the fishery on habitat types.	N	<p>Such a strategy is currently under development.</p>	<p>Norwegian Directorate of Fisheries.</p>
	The strategy is mainly based on information directly about the fishery and/or habitats involved, and testing supports high confidence that the strategy will work.	N		
	There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.	N		

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<b>Principle 2</b>		<b>Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.</b>		
<b>2.4 Component</b>		<b>Habitat</b>		<b>Summary Score</b>
<b>2.4.3 PI: Information and monitoring</b>		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types.		<b>85</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	There is a basic understanding of the types and distribution of main habitats in the area of the fishery.	Y	The characteristics of the marine ecosystem of the Barents Sea/Svalbard and Norwegian Sea areas are relatively well known. Numerous joint Norwegian/Russian ecosystem cruises have been performed in this area, examining habitat characteristics. In addition, the area is the focus of a large amount of research by IMR and Universities of Bergen and Tromsø.  Some data sets extend back to the 1930s. The results of these ongoing research programmes underpin the Barents Sea Management plan (BSMP).	MAREANO Stiansen et al. (2006); Anon, (2006)
	Information is adequate to broadly understand the main impacts of gear use on the main habitats, including spatial extent of interaction	Y	Earlier programmes established a broad understanding of the main impacts of gear use on the main habitats.	PROMARE
<b>80</b>	The nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery.	Y	The ongoing MAREANO programme provides a high level of knowledge on the nature distribution and vulnerability of all main habitat types and enhances the understanding of the impacts of trawling on main habitats of the area of fishery.	MAREANO ( <a href="http://www.mareano.no">www.mareano.no</a> )
	Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent, timing and location of use of the fishing gear.	Y	IMR (unpublished) compared the area trawled by the fishery with the known area of shrimp distribution in Barents Sea. Shrimp	IMR



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	Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Y	habitat was estimated to be approximately 850,000 km <sup>2</sup> and the area fished, about 15,000 km <sup>2</sup> , or 1.74%.	
<b>100</b>	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.	Y	The MAREANO programme is comprehensive, providing information on the distribution of habitat types over their ranges and has identified vulnerable habitat types.	MAREANO (www.mareano.no)
	Changes in habitat distributions over time are measured.	N	Though, the MAREANO programme is comprehensive, not all gear impacts on the habitats have been quantified fully. This work is still ongoing. It is also uncertain if changes in habitat distributions over the time would be measured by MAREANO.	
	The physical impacts of the gear on the habitat types have been quantified fully.	N		

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Principle 2		Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.		
2.5 Component		Eco-system		Summary Score
2.5.1 PI: Outcome status		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function.		80
SG	Scoring Issue	Met Y/N	Comments	Ref
60	The fishery is <u>unlikely</u> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	Y	<p>Clay/silt bottom sustains minimal damage from shrimp trawling. Fauna is restored back to its original status after 3 months. Species diversity is also largely unaffected due to the continued abundance of shrimp on the fishing grounds and the low level of by-catch in the fishery resulting from avoidance measures described above. The recent IMR analysis (see 2.4.1 above), comparing area fished to known shrimp habitat, provides some <u>evidence</u> that the fishery is highly unlikely to cause serious or irreversible harm to habitat.</p> <p>Shrimp is prey for many species, but their relative importance in the diet of predators is unknown. ECOSIM modelling (using a proxy for shrimp) suggests that under the current catch levels for shrimp there are no major trophic perturbations.</p> <p>Sufficient evidence is therefore available on the consequences of current levels of removal of target species to suggest no unacceptable impacts of the fishery on ecological systems within major fishing areas.</p> <p>With reference to non-target species, knowledge of the by-catch is sufficient to conclude no significant impact. Knowledge of the capture of non-commercial non-target species is incomplete.</p> <p>The existing studies on the impacts of trawling on habitat and</p>	University of Tromsø (BFE)



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80	The fishery is <u>highly unlikely</u> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	Y	quantification of bycatch as low provide evidence that the fishery is highly unlikely to cause serious or irreversible harm to ecosystem structure and function.	
100	There is <u>evidence</u> that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	N	There is evidence that the fishery is highly unlikely to disrupt some elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.  However the effects on benthic fauna and in-fauna are not well known, thereby score of 90 is warranted.	



## MSC FISHERY ASSESSMENT REPORT

<b>Principle 2</b>	<b>Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.</b>			
<b>2.5 Component</b>	<b>Eco-system</b>			<b>Summary Score</b>
<b>2.5.2 PI: Management strategy</b>	There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function.			<b>90</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	There are <u>measures</u> in place, if necessary, that take into account potential impacts of the fishery on key elements of the ecosystem.	Y	Measures include the mandatory use of sorting grates, permanent and temporary closed areas for fishing and the establishment of marine protected areas. Improved trawl design and use of low sulphur fuel result in reduce emissions from fishing activity.	Norwegian Directorate of Fisheries. Client Meeting. IMR.
	The measures are considered likely to work, based on <u>plausible argument</u> (eg, general experience, theory or comparison with similar fisheries/ ecosystems).	Y	By-catch is minimal, there is no fishing (therefore no impact) in permanent or temporary closed and marine protected areas and more efficient fishing operations result in reduced emissions.	

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<b>80</b>	There is a <u>partial strategy</u> in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	Y	<p>There is a strategy, based on the Marine Resources Act, with corresponding Regulations. The requirement within the shrimp fishery to land by-catch (discarding is not permitted) also represents an effective element in the ecosystem management strategy.</p> <p>Levels of non-target species have been studied and it has been determined that they form an insignificant part of the catch. However there is a lack of quantitative information on the amount of species escaping through the sorting grid.</p> <p>The Marine Resources Act and associated regulations provide a comprehensive strategy to restrain ecosystem impacts. There is provision within the Act for the Ministry that requires landing of by-catches of other marine organisms.</p> <p>The Act allows for the designation of further closed areas for ecosystem protection, as well as development of alternative management approaches as seen fit to protect the ecosystem. Based upon experience in other shrimp fisheries, and historical data from the fishery being certified, the measures in place are considered likely to work, and indeed exceed general practice in terms of non target species.</p> <p>The management strategy takes into account some ecosystem impacts. There are measures in place to protect both target and other species (temporary closure of high juvenile fish concentration, areas of cold water coral, etc). But the complexity of ecosystem functional relationships is not yet well understood or accounted for in the strategy.</p> <p>This and the fact that the strategy is incomplete justify the score of 90.</p>	<p>Havressurslova (Marine Resources Act )(2008)</p> <p>Stiansen et al. (2006)</p> <p>Norwegian Marine Resources Act</p> <p>MAREANO</p>
	The partial strategy is considered likely to work, based on <u>plausible argument</u> (eg, general experience, theory or comparison with similar fisheries/ ecosystems).	Y		
	There is <u>some evidence</u> that the measures comprising the partial strategy are being implemented successfully.	Y		
<b>100</b>	There is a <u>strategy</u> that consists of a <u>plan</u> , containing measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem.	Y		
	This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.	N		
	The measures are considered likely to work based on <u>prior experience</u> , plausible argument or <u>information</u> directly from the fishery/ecosystems involved.	Y		
	There is <u>evidence</u> that the measures are being implemented successfully.	Y		

## MSC FISHERY ASSESSMENT REPORT

<b>Principle 2</b>		<b>Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.</b>		
<b>2.5 Component</b>		<b>Eco-system</b>		<b>Summary Score</b>
<b>2.5.3 PI: Information and monitoring</b>		There is adequate knowledge of the impacts of the fishery on the ecosystem.		<b>95</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	Information is adequate to <u>identify</u> the key elements of the ecosystem (e.g. trophic structure and function, community composition, productivity pattern and biodiversity).	Y	Over the years, the IMR has built a considerable body of information regarding this fishery. The key element appears to be the productivity (growth, weight at age) of shrimp relative to the abundance of cod. The ECOSIM methodology has been used to consolidate data sets and develop mass balance trophic model of the Barents Sea. The MAREANO programme provides knowledge on the nature, distribution and vulnerability of all main habitat types.	IMR, ECOSIM, MAREANO.
	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but <u>have not been investigated in detail</u> .	Y	The information and scoring rationale described in various performance indicators (above) infer that fishery impacts on key elements of the ecosystem are minor. Annual assessments determine status of the target species and evaluate bycatch. The ECOSIM models and the MAREANO programme facilitate an understanding of the impacts of trawling on main habitats of the area of fishery.	NAFO/ICES, 2010; ECOSIM; MAREANO.
<b>80</b>	Information is adequate to <u>broadly understand the functions</u> of the key elements of the ecosystem.	Y	There is sufficient specific and generic information available (see SG60) that enables a broad understanding of key elements of the ecosystem.	IMR; NAFO/ICES, 2010;
	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but <u>may not have been investigated in detail</u> .	Y	The absence of any immediate risk can be inferred from a general understanding of ecosystem dynamics (from stock assessments, ECOSIM modelling of trophic interactions and MAREANO mapping of habitats) and the absence of any significant negative data from the past half century.	ECOSIM; MAREANO.

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	The main functions of the Components (i.e. target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are <u>known</u> .	Y	There is an abundance of data and consequential understanding with respect to the target species. By-catches and retained species are minimal and fishing mortality is negligible. The MAREANO program provides information on the distribution and vulnerability of habitat types.	
	Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.	Y	The information and scoring rationale provided for the preceding scoring issues infer that fishery impacts on the Components of the ecosystem are minor.	
	Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures)	Y	Stock assessments, the MAREANO program and ECOSIM modelling are ongoing. As they are all data driven, they rely on continuing programs to expand the data base.	
<b>100</b>	Information is adequate to <u>broadly understand the key elements</u> of the ecosystem.	Y	<p>Knowledge of the food web related to shrimp is broadly understood in the Barents Sea (ECOSIM). Earlier investigations underpin the development of the ecosystem management plan in the area.</p> <p>Shrimp are prey for many marine species in the Barents Sea, but not known to be a critical component in diet of any predator. Shrimp feed on a large range of prey, including the phytoplankton, zooplankton and detritus. Fluctuations in the cod stock have been associated with shrimp abundance; however a statistical correlation has not been established. Variation in bottom temperatures between years has been used to explain annual changes in shrimp distribution patterns.</p>	<p>NAFO/ICES 2010; Stiansen et al. (2006); Anon. (2006); Dingsør et al. (2007); Blanchard et al. (2002)</p>

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	Main <u>interactions</u> between the fishery and these ecosystem elements can be inferred from existing information, and <u>have been investigated</u> .	Y	<p>The ECOSIM methodology has been used to develop mass balance trophic model of the Barents Sea. The impacts of potential changes in shrimp levels, due to fishing and other potential causes, have been examined by these models. The models allow for temporal and spatial simulation of alternative fishing as well as environmental change scenarios to be examined on ecosystem components. Trophic relations of larval and juvenile stages have not been well developed.</p> <p>The impact of commercial fishing on the spawning stock directly is studied through the ICES/NAFO stock assessments. The current level of the shrimp stock in the Barents Sea (ICES area I and II) is estimated to be near carrying capacity.</p>	<p>ECOSIM</p> <p><a href="http://www.mareano.no">www.mareano.no</a></p>
	The impacts of the fishery on target, Bycatch, Retained and ETP species and Habitats are identified and the main functions of these Components in the ecosystem are <u>understood</u> .	N	<p>The impact of the fishery on the target and by-catch species are assessed annually. The by-catch is negligible and there is no apparent cause for concern. Measures are in place to monitor distributions and protect all species through by-catch control regulations. Although knowledge on the impacts of shrimp trawling is incomplete, it appears unlikely that the fishery would reduce habitat structure and function to a point where there would be serious or irreversible harm. The recent IMR analysis (see 2.4.1 above), comparing area fished to known shrimp habitat, provides <u>evidence to support that conclusion</u>.</p> <p>However, it cannot be said that the available information covers all species and habitats. Hence, the impacts of the fishery and the main functions of ecosystem components are not fully understood.</p>	

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	Sufficient information is available on the impacts of the fishery on the Components <u>and elements</u> to allow the main consequences for the ecosystem to be inferred.	Y/N	IMR has a substantial body of information on key elements of the ecosystem, but principally commercial species, predators and prey to enable the main consequences of the fishery for the ecosystem to be inferred. The simulation models, developed for the Barents Sea are based on information collected as a result of stomach content research as well as other investigations that support the management plan for the ecosystem. However, there is little or no information for many non-commercial species.	
	Information is sufficient to support the development of strategies to manage ecosystem impacts.	Y	<p>IMR has a substantial body of information to support the development of strategies to manage ecosystem impacts. The Marine Resources Act and other related regulations provide sufficient data collection to identify increase in risk level. This is also supported by ongoing research cruises, ECOSIM modelling and the MAREANO program.</p> <p>The intent of two issues in SG 100 is partially met. Main functions of some components and elements of the ecosystem are not fully understood. Also information for many non-commercial species is lacking. Therefore a score of 95 is justified.</p>	



## MSC FISHERY ASSESSMENT REPORT

Principle 3		The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.		
3.1 Component		Governance and policy		Summary Score
3.1.1 PI: Legal and/or customary framework		The management system exists within an appropriate and effective legal and/or customary framework which ensures that it: - Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; - Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and - Incorporates an appropriate dispute resolution framework.		100
SG	Scoring Issue	Met Y/N	Comments	Ref
60	The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.	Y	The Norwegian system is consistent with national laws and international standards.  There is a national law, Marine Resources Act, which also regulates this fishery. Fisheries activities are guided by NAFO/ICES advice.	Ministry of fisheries and coastal affairs.
	The management system incorporates or is subject by law to a <u>mechanism</u> for the resolution of legal disputes arising within the system.	Y	Administrative disputes are dealt with by Fisheries Directorate. All other disputes are dealt with by Norwegian legal system.	
	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	Y	Neither the management authority nor the fishery has been subject to court challenges in the recent past. Records of all infringements are available annually in the Coast Guard report.	Coast Guard report (2010); Fisheries Directorate;
	The management system has a mechanism to <u>generally respect</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	Y	There are no people dependent on fishing shrimp for food and livelihood that applies to this fishery.	Ministry of fisheries and coastal affairs.
80	The management system incorporates or is subject by law to a <u>transparent mechanism</u> for the resolution of legal disputes which is <u>considered to be effective</u> in dealing with most issues and that is appropriate to the context of the fishery.	Y	The mechanism for resolution of legal disputes is incorporated into the management system and is by nature transparent.  In the recent past there has been no Coast Guard Notice that resulted in legal dispute.	Coast Guard report, 2010; Fisheries Directorate;



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	The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges.	Y	The management system is designed to deal with judicial decision in a timely fashion; however no legal challenges have been reported or documented in the recent past.	Norwegian Directorate of Fisheries;
	The management system has a mechanism to <u>observe</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2	Y	There are no people dependent on fishing shrimp for food and livelihood that applies to this fishery.	Ministry of fisheries and coastal affairs.
100	The management system incorporates or is subject by law to a <u>transparent mechanism</u> for the resolution of legal disputes that is appropriate to the context of the fishery and has been <u>tested and proven to be effective</u> .	Y	<p>The mechanism for resolution of legal disputes is incorporated into the management system and is by nature transparent.</p> <p>In the recent past there has been no Coast Guard Notice that resulted in legal dispute.</p> <p>“The regulatory system for fisheries management in Norway is an interactive and iterative process based on incremental changes” (<a href="http://www.fisheries.no">www.fisheries.no</a>). The system includes consulting the fishing industry as well as stakeholders, hence it is transparent.</p> <p>In general, the management system has been subject to reviews in court cases and proven to be effective.</p>	Norwegian Directorate of Fisheries ( <a href="http://www.fisheries.no/resource_management/setting_quotas/The-regulatory-chain/">http://www.fisheries.no/resource_management/setting_quotas/The-regulatory-chain-/</a> )
	The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.	Y	The regulatory system is mandated to ensure a proactive approach to avoid legal disputes and ensures rapid implementation of binding judicial decisions through the legal and management system.	<a href="http://www.fisheries.no">www.fisheries.no</a>
	The management system has a mechanism to <u>formally commit</u> to the legal rights created explicitly or established by custom on people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	Y	There are no people dependent on fishing shrimp for food and livelihood that applies to this fishery.	Ministry of fisheries and coastal affairs.

## MSC FISHERY ASSESSMENT REPORT

<b>Principle 3</b>		<b>The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.</b>		
<b>3.1 Component</b>		<b>Governance and policy</b>		<b>Summary Score</b>
<b>3.1.2 PI: Consultation, roles and responsibilities</b>		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties.		<b>100</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>generally understood</u> .	Y	Stakeholders involved in the management of the shrimp fisheries are identified as scientific organisations like NAFO/ICES, research institutes (IMR), fishery industry organisations, NGOs, regional counties and relevant government bodies. Their roles and responsibilities including the consultation process are defined in the legal instruments for the management of the fisheries and implemented through The Regulatory Chain (www.fisheries.no).	Norwegian Directorate of Fisheries
	The management system includes consultation processes that <u>obtain relevant information</u> from the main affected parties, including local knowledge, to inform the management system.	Y	The management system requires consultation processes that involves Fisheries directorate coordinating relevant issues with identified stakeholders.	
<b>80</b>	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>explicitly defined and well understood for key areas</u> of responsibility and interaction.	Y	Stakeholders involved in the management of the shrimp fisheries are identified as scientific organisations like NAFO/ICES, research institutes (IMR), fishery industry organisations, NGOs, regional counties and relevant government bodies. Their roles and responsibilities including the consultation process are defined in the legal instruments for the management of the fisheries and implemented through The Regulatory Chain (www.fisheries.no).	
	The management system includes consultation processes that <u>regularly seek and accept</u> relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	Y	The management system requires consultation processes that involves Fisheries directorate coordinating relevant issues with identified stakeholders.	

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	The consultation process <u>provides opportunity</u> for all interested and affected parties to be involved.	Y	The consultation process is open for all interested parties and all relevant documents are available on web-site of Directorate of fisheries. Engagement is facilitated by the timely announcement of meeting through various media.	
100	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>explicitly defined and well understood</u> for <u>all areas</u> of responsibility and interaction.	Y	Stakeholders involved in the management of the shrimp fisheries are identified as scientific organisations like NAFO/ICES, research institutes (IMR), fishery industry organisations, NGOs, regional counties and relevant government bodies. Their roles and responsibilities including the consultation process are defined in the legal instruments for the management of the fisheries and implemented through The Regulatory Chain ( <a href="http://www.fisheries.no">www.fisheries.no</a> ).	
	The management system includes consultation processes that <u>regularly seek and accept</u> relevant information, including local knowledge. The management system demonstrates consideration of the information and <u>explains how it is used or not used</u> .	Y	The management system requires consultation processes that involves Fisheries directorate coordinating relevant issues with identified stakeholders.	
	The consultation process <u>provides opportunity and encouragement</u> for all interested and affected parties to be involved, and <u>facilitates</u> their effective engagement.	Y	The consultation process is open for all interested parties and all relevant documents are available on web-site of Directorate of fisheries. Engagement is facilitated by the timely announcement of meeting through various media.	



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<b>Principle 3</b>		<b>The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.</b>		
<b>3.1 Component</b>		<b>Governance and policy</b>		<b>Summary Score</b>
<b>3.1.3 PI: Long term objectives</b>		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach.		<b>70</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	Long-term objectives to guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>implicit</u> within management policy.	Y	Effort control, mandatory use of grids, mesh size, min size of shrimp, temporary and permanent closures, and marine protected areas reflect implicit long-term objectives of fisheries sustainability and ecosystem consideration through a precautionary approach.	Norwegian Directorate of Fisheries
<b>80</b>	<u>Clear</u> long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are <u>explicit</u> within management policy.	N	There is no formal management policy; however there is ongoing work to establish a general management plan as well as a specific Harvest Control Rule for Norwegian shrimp fisheries in Barents Sea (ICES I and II).	Ministry of fisheries and coastal affairs.
<b>100</b>	<u>Clear</u> long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>explicit</u> within <u>and required by</u> management policy.	N	The work in progress justifies the score of 70. <b>CONDITION 1</b>	Norwegian Directorate of Fisheries



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<b>Principle 3</b>		<b>The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.</b>		
<b>3.1 Component</b>		<b>Governance and policy</b>		<b>Summary Score</b>
<b>3.1.4 PI: Incentives for sustainable fishing</b>		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.		<b>75</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	Y	The rights-based management (License System) for the major part of this fishery provides incentives for Norwegian fishermen to conduct shrimp fishery in a sustainable manner.  Norwegian vessels do not receive subsidies that contribute to unsustainable fishing of shrimp. Communication between fishermen and management is effective and reduces information gaps and uncertainties. The consultation process affords support for the management system from fishermen and encourages a sense of stewardship.	Directorate of Fisheries;  Client meeting
<b>80</b>	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that negative incentives do not arise.	N	Under the Marine Resources Act, landing of all by-catch is mandatory. However this requirement is not deemed practical by the industry because the responsibility & costs for disposal of non-commercial by-catches is borne by the fishermen. Furthermore the regulation does not seem to be adequately monitored by management.	
<b>100</b>	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and <u>explicitly considers incentives in a regular review of management policy or procedures to ensure that they do not contribute to unsustainable fishing practices.</u>	N	<b>CONDITION 3</b>	



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<b>Principle 3</b>		<b>The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.</b>		
<b>3.2 Component</b>		<b>Fishery- specific management system</b>		<b>Summary Score</b>
<b>3.2.1 PI: Fishery-specific objectives</b>		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.		<b>70</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <u>implicit</u> within the fishery's management system.	Y	Effort control, mandatory use of grids, mesh size, min size of shrimp, temporary and permanent closures, and marine protected areas reflect implicit objectives of fisheries sustainability and ecosystem consideration through a precautionary approach.	Norwegian Directorate of Fisheries
<b>80</b>	Short and long term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <u>explicit</u> within the fishery's management system.	Y/N	There are no short or long-term explicit management objectives; however there is ongoing work to establish a general management plan as well as a specific Harvest Control Rule for Norwegian shrimp fisheries in Barents Sea (ICES I and II).	Ministry of fisheries and coastal affairs.
<b>100</b>	Well defined and measurable short and long term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <u>explicit</u> within the fishery's management system.	N	The work in progress justifies the score of 70. <b>CONDITION 1</b>	Norwegian Directorate of Fisheries

## MSC FISHERY ASSESSMENT REPORT

<b>Principle 3</b>		<b>The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.</b>		
<b>3.2 Component</b>		<b>Fishery- specific management system</b>		<b>Summary Score</b>
<b>3.2.2 PI: Decision-making processes</b>		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives.		<b>95</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	There are <u>informal</u> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	Y	The Regulatory Chain establishes a decision making process that result in strategies to achieve implicit fishery - specific objectives. The score of 95 is justified because fisheries specific objectives are implicit rather than explicit.	Norwegian Directorate of Fisheries
	Decision-making processes respond to <u>serious issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take <u>some</u> account of the wider implications of decisions.	Y		
<b>80</b>	There are <u>established</u> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	Y	Decision making process is based on precautionary approach and stakeholder involvement and ensures that all relevant issues regarding research, monitoring, evaluation and consultation are considered annually. Furthermore other relevant issues can be addressed as they arise.	
	Decision-making processes respond to <u>serious and other important issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Y		
	Decision-making processes use the precautionary approach and are based on best available information.	Y		
	<u>Explanations</u> are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Y		
<b>100</b>	Decision-making processes respond to <u>all issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Y		
	<u>Formal reporting</u> to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Y	Findings and relevant recommendations emerging from research, monitoring, evaluation and review activity related to this fishery are formally reported and available on web-pages (e.g. Norwegian Ministry of Fisheries and Coastal Affairs, Fisheries Directorate, ICES, NAFO, IMR).	



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<b>Principle 3</b>		<b>The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.</b>		
<b>3.2 Component</b>		<b>Fishery- specific management system</b>		<b>Summary Score</b>
<b>3.2.3 PI: Compliance and enforcement</b>		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with.		<b>75</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	Monitoring, control and surveillance <u>mechanisms</u> exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.	Y	Throughout the unit of certification, there is a rigorous enforcement regime to ensure a high degree of compliance across all fishing fleets participating in this fishery. All offshore vessels must be equipped with VMS and maintain up to date electronic logbooks which are subject to frequent at sea inspections by Norwegian fishery inspection vessels. These inspections also ensure that technical measures are being complied with and the catches tally with log book records. For more information on monitoring, control and surveillance see section 8.6 of assessment report.	Norwegian Directorate of Fisheries; Coast Guard annual report, 2010
	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Y	There is a comprehensive sanctions system in place and all fishing grounds are under regular surveillance by the Norwegian coast guard.	
	Fishers are <u>generally thought</u> to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Y	The low level of violations in this fishery provides evidence that the fishermen comply with the management system. There is no evidence of systematic non-compliance.	

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<b>80</b>	A monitoring, control and surveillance <u>system</u> has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	N	A monitoring, control and surveillance <u>system</u> has been implemented. In most instances the ability to enforce management measures, strategies and/or rules has been demonstrated. However, the fishery has demonstrated an inability to enforce the regulation that requires the mandatory landing of all by-catch. Therefore the score of 75 is justified.  <b>CONDITION 3</b>	
	Sanctions to deal with non-compliance exist, <u>are consistently applied</u> and thought to provide effective deterrence.	Y	There is a comprehensive sanctions system in place and all fishing grounds are under regular surveillance by the Norwegian coast guard.	
	<u>Some evidence exists</u> to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	Y	The low level of violations in this fishery provides evidence that the fishermen comply with the management system. There is no evidence of systematic non-compliance.	
	There is no evidence of systematic non-compliance.	Y		
<b>100</b>	A <u>comprehensive monitoring</u> , control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.	N	There is a comprehensive monitoring, control and surveillance system and there is a system of sanctions to deal with non-compliance but the fishery has demonstrated an inability to enforce the regulation that requires the mandatory landing of all by-catch, as is the case in by- catch of polar cod.	
	Sanctions to deal with non-compliance exist, are consistently applied and <u>demonstrably provide</u> effective deterrence.	N		
	There is a <u>high degree of confidence</u> that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.	N		

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<b>Principle 3</b>		<b>The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.</b>		
<b>3.2 Component</b>		<b>Fishery- specific management system</b>		<b>Summary Score</b>
<b>3.2.4 PI: Research plan</b>		The fishery has a research plan that addresses the information needs of management.		<b>95</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	<u>Research</u> is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	Y	The fishery has a comprehensive research plan conducted by IMR and University of Tromsø. The research programme provides a long time series of stock data, as well as reliable and timely information sufficient to support the necessary management measures. However, the research programme is not addressing all needs of the fishery. For example, there appear to be some gaps in the knowledge of sex and length distributions, and hence predicting recruitment to the fishable stock. The score is therefore lowered to 95.	IMR Tromsø University Ministry of fisheries and coastal affairs
	Research results are <u>available</u> to interested parties.	Y		
<b>80</b>	A <u>research plan</u> provides the management system with a strategic approach to research and <u>reliable and timely information</u> sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	Y		
	Research results are <u>disseminated</u> to all interested parties in a <u>timely</u> fashion.	Y		
<b>100</b>	A <u>comprehensive research plan</u> provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and <u>reliable and timely information</u> sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	Y		
	Research <u>plan</u> and results are <u>disseminated</u> to all interested parties in a <u>timely</u> fashion and are <u>widely and publicly available</u> .	Y		



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<b>Principle 3</b>	<b>The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.</b>			
<b>3.2 Component</b>	<b>Fishery- specific management system</b>			<b>Summary Score</b>
<b>3.2.5 PI: Monitoring and management performance evaluation</b>	There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system.			<b>100</b>
<b>SG</b>	<b>Scoring Issue</b>	<b>Met Y/N</b>	<b>Comments</b>	<b>Ref</b>
<b>60</b>	The fishery has in place mechanisms to evaluate <u>some</u> parts of the management system and is subject to <u>occasional internal</u> review.	Y	Reporting of regulations and enforcement to the Norwegian Parliament occur annually. The National audit office performed a major audit on the management system in 2003-2004 reviewing resource management, Ministerial management and enforcement by subsidiary bodies like the IMR and Fisheries Directorate, etc. The report was presented to the Parliament. Research is published in scientific journals and subject to regular peer review therein. IMR has also had two major scientific reviews over the last decade by independent committees.	Norwegian Ministry of Fisheries and Coastal Affairs
<b>80</b>	The fishery has in place mechanisms to evaluate <u>key</u> parts of the management system and is subject to <u>regular internal</u> and <u>occasional external</u> review.	Y		
<b>100</b>	The fishery has in place mechanisms to evaluate <u>all</u> parts of the management system and is subject to <u>regular internal</u> and <u>external</u> review.	Y		

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# MSC FISHERY ASSESSMENT REPORT

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